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Identity of the Knight Anole Introduced to Oahu, Hawaiian Islands

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A giant anole identified as *Anolis equestris* was introduced to Oahu, Hawaii, prior to 1981 and has become well established in the wild at least along the windward coast (McKeown, 1996). While we assume these anoles to have been introduced via the pet trade from Florida, there are 20 described forms of *Anolis* in the *equestris* complex arranged in five full species in Cuba (Schwartz and Garrido, 1972). It therefore seemed advisable to determine the precise identity of the Oahu population.

On 30 May 1997 an adult male 169 mm snout–vent length (SVL) was received at The Conservation Agency (TCA) alive and well, from Dr. Fred Kraus, Hawaii Division of Forestry and Wildlife. The specimen had been collected on 16 May 1997 by Tanya Kiaha on Lumiaina Street in Waipahu, windward Oahu. This individual was brilliant leaf green with a bright yellow axillary bar and band from upper labials to ear. The head casque edges were yellow and there were large yellow blotches along the dorsal tail. The throat fan was rose pink with pale green longitudinal streaks at the antero-proximal edge. The orbital skin was blue-gray and turned slate-black when the animal was handled, at which time the green ground color changed to sooty gray.

In bright sunlight, the ground color changed paler, to emerald green, the casque edges changed to chartreuse, and the canthal and interparietal knobs changed to orange. Color slides were made of the living specimen. This specimen was deposited in the B. P. Bishop Museum (BPBM 13718), Honolulu.

On 17 August 1997 an adult male 165 mm SVL and an adult female 145 mm SVL were received at TCA, alive and well, from Hawaii State Department of Agriculture, via Duane Meier of the Honolulu Zoo. These had been collected 5 May 1997 at Kaneohe and Kailua, also windward Oahu, but we were not told which came from each locality. These specimens were darker, grayer green than BBM 10089, but had similar bright yellow markings and rose-pink throat fans. They were deposited in the Museum of Comparative Zoology (MCZ 187227-8), Harvard University.

All three specimens were compared to specimens in the MCZ directly, and to the diagnoses and descriptions provided by Schwartz and Garrido (1972). They are nominate *Anolis equestris equestris*, which occurs naturally "from Habana Province east to northwestern Las Villas Province," Cuba. Because we believe this species reached Oahu from South Florida (McKeown, 1996), we believe the Oahu population was founded from a propagule taken from a previous population (Florida's) founded from a propagule. The opportunities for genetic research on each sequential derivation (Florida from Cuba, Oahu from Florida) are exceptional. The implications for conservation efforts involving small gene pools and potentials for inbreeding depression should not be ignored.

Acknowledgments

We are indebted to Charles Christensen and the Hawaii State Department of Agriculture, Fred Kraus, and Duane Meier of the Honolulu Zoo for forwarding the specimens, and MCZ, Harvard, for making comparative material available. Lazell's work was funded by The Conservation Agency.

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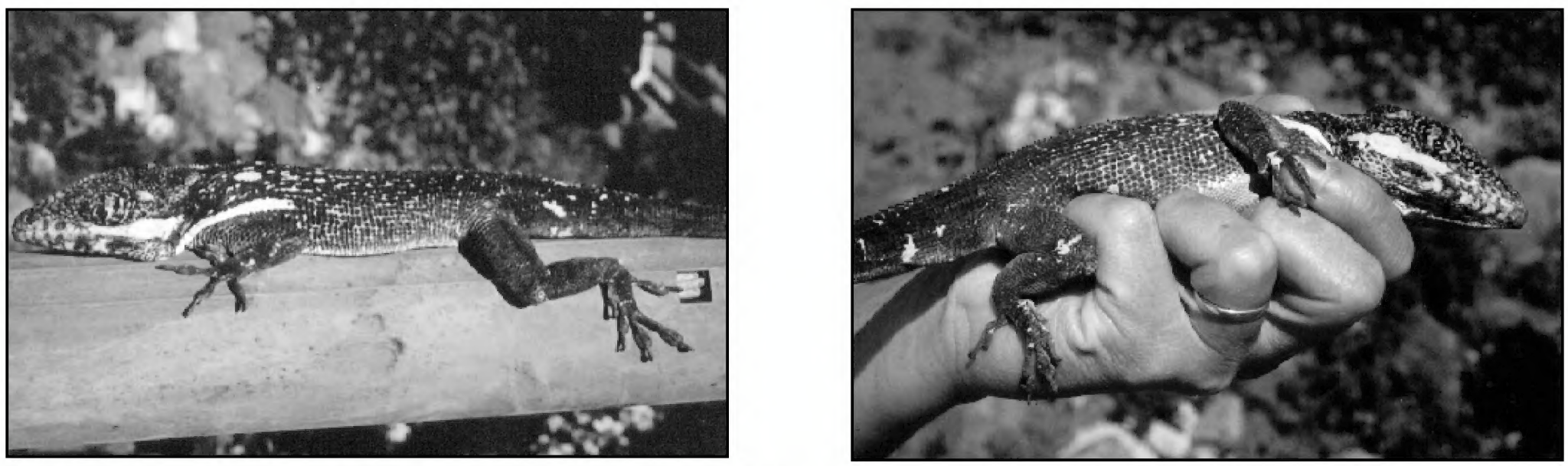

Adult male knight anole, *Anolis equestris equestris*, from Oahu, Hawaii. Photographs by Sean McKeown.

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North African Amphibians and Reptiles in the University of Colorado Museum

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Abstract

The University of Colorado Museum has acquired some 1136 amphibians and reptiles, representing 53 species-group taxa, from the North African countries of Egypt, Morocco, Sudan and Tunisia. All but 73 specimens are from Tunisia; those 73 represent 21 taxa, of which 18 were not taken in Tunisia. The material includes a species (*Coluber florulentus*) not noted in the latest herpetofaunal account for Egypt, a range extension of *Discoglossus pictus* in Tunisia, an indication of possible intergradation of *Eumeces algeriensis* and *E. schneiderii* in Tunisia, addition of *Acanthodactylus bedriagai*, *A. dumerili exiguus* and *Tropiocolotes tripolitanus algericus* to the herpetofauna of Tunisia, and a size record for *Coluber a. algirus*.

Primarily through the influence and efforts of one of us (PR), over a period of some 10–15 years during the 1960s and early 1970s, the University of Colorado Museum accumulated a relatively large collection of some 1136 specimens representing 53 species-group taxa of amphibians and reptiles from the northern African countries of Morocco, Tunisia, Egypt and Sudan. The entire collection was cataloged in the UCM, but about one-tenth was returned to permit-granting authorities; all of the remainder continues available in the UCM. Returned material is indicated by the abbreviation "ret." in the species accounts.

We are aware of but one other publication on any part of the present material (Busack and McCoy, 1990). Stimulated by the epochal publication of the excellent review of the herpetology of North Africa by Schleich et al. (1996), we here record basic information from the collection to make its existence better known to future workers. Our annotations are largely limited to information supplemental to that given in Schleich et al. (1996). Especially notable contributions to present knowledge are the addition of *Coluber florulentus* to the Egyptian herpetofauna; suggestion of intergradation of *Eumeces algeriensis* and *E. schneiderii* in Tunisia; a range extension of *Discoglossus pictus* in Tunisia; addition of *Acanthodactylus bedriagai*, *A. dumerili exiguus* and *Tropiocolotes tripolitanus algericus* to the Tunisian herpetofauna; and a size record for *Coluber a. algirus*. Endemism in the four countries from which material is available is extensive; only three of our taxa are shared by as many as two countries, none by three or four.

Most of the collection was accumulated incidentally, peripheral to the main objective of archaeological (northern Sudan and southern Egypt) and paleontological work (Tunisia and Morocco) by various members of the CU faculty. Participants in herpetological collecting included, most notably, Dr. T. Paul Maslin, but also Drs. John Bushnell, Joe Ben Wheat, Minor Van Arsdale and Gary Lister, as well as PR. The late Prof. Miguel Crusafont-Pairo aided in the collection near Beni Mellal, Morocco.

During the 1969 field season many local teenagers were hired to collect reptiles, amphibians, mammals and arachnids in the Bled Douarah, a small intermontane basin 43 km west of Gafsa, Tunisia. Other collections were made by expedition personnel. The collections were made in late winter and early spring, thus largely limiting material to whatever could be found under moveable rocks.

The collection site Dabarosa West in Sudan is now submerged under Lake Nasser; it was a village straight west of Wadi Halfa, on the west side of the Nile River.

In April 1969 a torrential downpour resulting in flash floods hit the Bled Douarah and surrounding area after a 10-month drought. The resultant saturation of the soil brought out many amphibians that had been hibernating or estivating. The paleontological expedition had a laboratory in the Oasis at Gafsa and many specimens were found in irrigation canals near the laboratory, or near the gardens of the Hotel Jugurtha where the expedition personnel were housed.

For some material from Morocco we are indebted to H. A. Fehlmann, who collected there in 1943, and V. Allard, 1958.

Species Accounts

Caudata: Salamandridae

Pleurodeles poireti (Gervais). A total of 14 specimens were taken, including 12 larvae (UCM 36603), from 1 km W Sedjenane, Gouv. Bizerte, Tunisia, 17 March 1969. They vary in SVL from 13 mm (at which size hind legs are not evident, although 4.5 mm forelegs are present) to 30 mm. The penultimate smallest individual (SVL 15 mm), has hind legs 2.4 mm in length; in one at 17 mm SVL the hind legs are well developed, at 4.5 mm.

Two adults (UCM 36443-4) are from 5 km NW Tunis, Gouv. Tunis, Tunisia, 13 March 1969.

Anura: Discoglossidae

Discoglossus p. pictus Otth. Twenty-eight adult specimens, of which 23 remain in the collection, were taken. They include two (UCM 36445-6) from "below the university," Tunis, Tunisia, 13 March 1969; 19 (UCM 36447-65, three ret.) from Salammbo, Carthage, Gouv. Tunis, Tunisia, 8 February 1969; three (UCM 36466-8, one ret.) from Gafsa Oasis, 8 February 1969; and four (UCM 36469-72, one ret.), same locality as 36466, 8 March 1969.

The smallest female is 14 mm in SVL, taken 8 February 1969, the largest 46 mm; the smallest male is 41 mm in SVL, the largest 67 mm. Two (UCM 36447, 36457) exhibit the striped pattern, one (UCM 36464) is intermediate between the striped and spotted pattern, and all the rest are spotted.

The specimens from Gafsa extend the known range of the species, as depicted by Schleich et al. (1996: 110), some 300 km southward from the Tunis area to central Tunisia. The species is common in the Gafsa Oasis.

Nineteen larvae (UCM 36604) are from Gouv. Bizerte, 1 km W Sedjenane, 17 March 1969. They vary in total length from 10 to 32 mm; the larger ones have well developed hind legs, although rudiments are visible at a total length of 20 mm. The larval oral disc remained present in one larva at 30 mm TTL (hind leg at 11.5 mm); in one with hind legs at 13 mm, the oral disc is degenerate. In those with longer hind legs, the oral disc is not evident.

Anura: Bufonidae

Bufo mauritanicus Schlegel. Twenty-six specimens were taken (19 remain in the collection), all from Tunisia except for two (UCM 51915, 59534) from Beni Mellal, Morocco. One (UCM 36473) is from 5 km NE Tunis, 13 March 1969. Five of a former eight (UCM 36422-9) were taken at Gafsa after a rainstorm in April 1968. One (UCM 47471) is from Nefta Oasis, Gouv. Gafsa, 15 March 1971. All others (10 of the original 14) were taken at Gafsa Oasis, 8 and 11 February and 14 March 1969.

The ones taken after the rainstorm are all juveniles, 24–28 mm SVL. All others are adults. The males tend to be larger than specimens available of *Bufo viridis*, four (of nine) exceeding the maximum (92 mm) SVL of the latter, and reaching 116 mm. The largest female measures 94 mm SVL. One male (UCM 47471) is unicolor, and another (UCM 36479) nearly so.

Bufo viridis Laurenti. Fifty examples were taken, all from Tunisia; 43 remain in the collection. Three (UCM 36488-90) are from 5 km NE Tunis, 13 March 1969. The others are from Gafsa Oasis (UCM 36502-9, two ret.), 15 and 19 February 1969; 5 km W Gafsa, Jugurtha Hotel area (UCM 36501); basin floor of Bled Douarah, 400 m, spring 1968 (UCM 36430-1), 6, 18 and 26 February and 3 March 1969 (UCM 36491-36500, 36510-35, five ret.).

One male (UCM 36490) is unicolor, another (UCM 36527) nearly so. The smallest specimen measures 31 mm SVL, the smallest determinable male 66 mm. Eighteen of the 43 specimens are males.

Anura: Hylidae

Hyla meridionalis Boettger. One specimen (UCM 20442) is from 18 mi NW Rabat, Morocco, March 1943.

Anura: Ranidae

Rana saharica Boulenger. The present name was tentatively adopted by Schleich et al. (1996: 136-140) in lieu of several other names that have been applied to North African frogs of this complex.

Seventy-three specimens were taken in Tunisia, of which 65 remain in the collection. Gouv. Bizerte: 1 km W Sedjenane (UCM 36536-42, three ret.); Gouv. Gafsa: Rass El Aioun, pools in wadi bed, 17 February 1969 (UCM 36584-602), Rass El Aioun, in Seldja Oued Spring, 1968 (UCM 36432-3), Gafsa Oasis, 8 and 14 February and 8 March 1969 (UCM 36546-83, 48077, three ret.), Nefta Oasis, 15 March 1961 (UCM 37472-3); Gouv. Tunis: Tunis, below university, 13 March 1969 (UCM 36543-5, two ret.).

Thirty of a total of 65 are males, varying in SVL from 44 mm (the smallest at which nuptial pads are clearly evident, UCM 36585) to 78 mm SVL (UCM 36571). The smallest specimen (UCM 36600) measured 33 mm in SVL, and the largest female 99 mm.

Testudines: Emydidae

Emys orbicularis (Linnaeus). A single specimen (UCM 36643) was taken 17 March 1969 1 km W Sedjenane, Gouv. Bizerte, Tunisia.

Mauremys leprosa (Schweigger). Thirty-eight specimens (UCM 36605-42) were taken 7 March 1969, from Gafsa, Tunisia. The 18 at present available vary in carapace length from 27.2 mm to 60.4 mm.

Testudines: Trionychidae

Trionyx triunguis Forskal. A single specimen (UCM 18918) was purchased in Wadi Halfa, Sudan, 8 December 1962. It has been skeletonized.

Amphisbaenia: Amphisbaenidae

Blanus tingitanus Busack. A single specimen (UCM 51910) is from the slope below Fortin Gillory, 650–725 m, Beni Mellal, Morocco, taken 28 February 1970.

Trogonophis wiegmanni elegans (Gervais). Two specimens are available, both from Morocco. One (UCM 51919) is from near Beni Mellal, 28 February 1970; the other (UCM 16376) was taken 18 mi N Rabat, March 1943.

Sauria: Agamidae

Agama impalearis Boettger. Nine specimens are from Morocco: slopes behind Fortin Guillory, Beni Mellal, 650–725 m, 28 February 1970 (UCM 51901-8); Hwy between Marrakech and Amizmiz, km 27 (UCM 51891). SVL varies between 37 mm (UCM 51903, tail 50 mm) and 123 mm (UCM 51891, tail inc.). The nuchal crest is evident in all, but minimally in the smallest. Black bars on the throat are prominent in most, very weak in three; in the largest, the throat is densely suffused with black except peripherally, where dark bars remain visible; the ventral surfaces of trunk, tail and limbs in that specimen are also suffused with black.

Trapelus mutabilis (Merrem). Sixty-eight specimens were taken (UCM 36434, 36644-36710), of which 58 remain. All are from Gouv. Gafsa, Tunisia: two from Tozeur, late 1968; one from 26 km SW Metlaoui, Oued Gouifla, 40 m, 4 March 1969; two from 20 km W Gafsa, Djebel es Stah, 8 March 1969; and all the rest from Bled Douarah, 400 m, 11 February–16 March 1969.

The largest specimen, a female, has a SVL of 85 mm, the largest male 78 mm. The smallest has a SVL of 34 mm. Males have a dark throat and dark sides of abdomen, not apparent in females; the throat is barred or marbled with black

in both sexes. In one male (not the largest), the throat is entirely black. The abdomen is also marbled with black in a few specimens of both sexes. Preanal pores are well developed in mature males, dimly evident in others.

Uromastyx acanthinura Merrem. Forty specimens were taken, all in Tunisia. Five (UCM 36745-9) are from near Gafsa, 24–25 February 1969, and all the rest (UCM 36435, 36711-44) from Bled Douarah, 400 m. The latter were taken in spring, 1968, and the others 11 February–1 March 1969.

The smallest of the five now on hand is 58 mm in SVL, the largest 180 mm. Femoral and preanal pores are well developed in all.

Sauria: Anguidae

Ophisaurus koellikeri (Günther). A single specimen (UCM 20085) is from 18 mi N Rabat, Morocco, March 1943.

Sauria: Chamaeleonidae

Chamaeleo africanus Laurenti. Ten specimens were taken in Sudan. Two (UCM 55638-9) are from Wadi Halfa, 9 March 1964, and eight (UCM 18924-32, one ret.) from Dabarosa West, 16 January 1962 and December–January 1962–3.

This species is readily distinguished from *C. chamaeleon* by shape of the cranial crests and presence of tarsal spurs in males, as pointed out by Schleich et al. (1996).

Chamaeleo c. chamaeleon (Linnaeus). Nine specimens were taken, all in Tunisia, and six remain in the collection. Four (UCM 36750-1, 36756-7) are from Bled Douarah, 400 m, 10 February–5 March 1969; three (UCM 36753-5) from 20 km NW Gafsa, 8 March 1969; one (UCM 36752) from 16 km N Gafsa, 26 February 1969; and one (UCM 36758) from Gafsa, 10 February 1969.

Sauria: Gekkonidae

Hemidactylus turcicus (Linnaeus). A single specimen (UCM 36759) was taken 16 February 1969 20 km NW Gafsa, Tunisia.

Ptyodactylus ragazzii Anderson. Four specimens are from Sudan. Three are from Wadi Halfa, 2 January 1963 (UCM 18921), 24 January 1963 (UCM 18923) and 9 March 1964 (UCM 55611). One (UCM 18922) is from Dabarosa West, 10 January 1963.

The largest (63 mm SVL) exhibits no pattern, and is unicolor light tan; two of intermediate size have faint vestiges of pattern; and only the smallest (29 mm SVL) has a distinct pattern, as illustrated in Schleich et al. (1996: 244).

Saurodactylus brosseti Bons and Pasteur. Four specimens are available from Morocco. One, the largest at 30 mm SVL (UCM 51916), is from near Beni Mellal, 28 February 1970. The others (UCM 51912-4) are from km 26 on the Marrakech–Amizmiz highway, 3 March 1970. All have the median subcaudals but little wider than long, and all show evidence of a pair of light lines converging on the rostral from the superciliary region.

Stenodactylus petriei Anderson. A single specimen (UCM 18920) was taken December 1962 at Dabarosa West, Sudan. It differs from *S. sthenodactylus* in having the nostrils protuberant and separated from the rostral; dorsal scales distinctly smaller than the laterals on trunk; and limbs longer (SVL 38 mm, tail inc.; foreleg from axilla 16 mm, hind leg from groin 22 mm). In a specimen of *S. s. mauritanicus* (UCM 36818) 38 mm SVL, the foreleg measures 15 mm, the hind leg 19 mm.

Stenodactylus sthenodactylus mauritanicus Guichenot. Seventy-six specimens were taken, all in Tunisia: Gafsa, 10 February 1969 (UCM 36829-30); 20 km NW Gafsa, 16 February 1969 (UCM 36760, 36831-4); 20 km W Gafsa, Djebel es Stah, 8 March 1969 (UCM 36826-8); Bled Douarah, 400 m, 5 February–6 March 1969 (UCM 36761-36825, 48078). Thirteen specimens were returned. All of the remainder have the nostrils in contact with the rostral, 2–5 lateral postanal spurs on each side (all in one row except for one with a clump of four on each side), lateral scales on trunk little different from dorsals. The SVL varies in this series from 24 to 54 mm.

Tarentola m. mauritanica (Linnaeus). Fifteen specimens were taken, all in Gouv. Gafsa, Tunisia: four (UCM 36835-8) from 6 km NW Degache, 18 February 1969; one (UCM 48079) from 30 km NW Gafsa, 16 February 1969; and ten (UCM 36436, 36839-47) from Bled Douarah, 400 m, spring 1968 and 1–6 March 1969. All have the external nares in contact with the rostral (on one side only in one), and the enlarged tubercles have simple keels, are surrounded by rosettes of enlarged scales and are not radially striated. The largest specimen is 65 mm in SVL, the smallest 19 mm.

Tropiocolotes tripolitanus algericus Loveridge. A single specimen (UCM 36869) was taken 5 March 1969 20 km SW Metlaoui, Gouv. Gafsa, Tunisia. It is a tailless juvenile 25.5 mm in SVL, with strongly keeled, flat dorsals and ventrals. The largest scale bordering the postmentals posteriorly is about one-fifth to one-sixth the size of the adjacent postmental; two scales in addition to the postmental border the 2nd infralabial medially, contrary to the one or none in *T. t. tripolitanus* fide Schleich et al. (1996: 283). The latter subspecies perhaps is restricted to more northern or eastern areas; *T. t. algericus* apparently has not been recorded previously in Tunisia, although it is known nearby in Algeria.

Sauria: Lacertidae

Acanthodactylus bedriagai Lataste. One hundred twenty-five specimens were taken, all in Gouv. Gafsa, Tunisia, 5 February–10 March 1969 except one 25 March 1970 (UCM 54121): Gafsa Oasis (UCM 37022-9); 20 km NW Gafsa, 200 m (UCM 36916); Bled Douarah, 400 m (UCM 36917-37201, 40801, eight ret.); 5 km NW Degache (UCM 37030-3); 6 km E Metlaoui (UCM 54121).

Although the species has not previously been recorded from Tunisia, fide Schleich et al. (1996: 388, 390-1), it is known from adjacent areas in Algeria, and the character-states in the present series of 112 conform well with the distinctive features of the species (Schleich et al., 1996: 375). The two rows of femoral pores are in contact in 53 of 61 males, barely separated by a half scale width or less in 8, whereas in 51 females only 10 had the two rows in contact, 19 had one scale between them, 15 had two scales, and 6 had half or less of a scale width between them.

The maximum number of ventrals in a transverse row varied from 12 to 15: 12, four; 13, thirty-six; 14, forty-eight; 15, twenty-four. The subocular contacts 2-4 supralabials: 2-2, 23; 2-3, 13; 3-3, 68; 3-4, 6; 4-4, 2; the variable is in the

middle below the subocular, where one, two or no small supralabials appear.

Acanthodactylus boskianus (Daudin). Twenty-five specimens were taken in Tunisia. One unicolor adult (UCM 54122) and one partially striped subadult (UCM 19095) are from Gouv. Kairouan, the latter from Djebel Bou Gobrine, 50 km SW Kairouan, 19 March 1970, the former from Kairouan, 20 August 1958. All others are from Gouv. Gafsa, taken in spring 1968 (UCM 36437) and 1–8 March 1969: UCM 36848-52, Bled Douarah, 400 m; UCM 36853-65 (3 ret.), 20 km W Gafsa, Djebel es Stah; UCM 36866-7 (1 ret.), Oued Baiech, Gafsa.

The pattern varies mostly ontogenetically, the bright juvenile stripes beginning to fade at about 48–55 mm SVL, and disappearing completely by the time that 65 mm SVL is reached. In one juvenile 42 mm SVL the median light line is but ~5 mm long, confined to the anterior part of the neck. The smallest specimen is 39 mm SVL, the largest 73 mm.

Acanthodactylus dumerili exiguus Lataste. Forty-eight specimens are all from Gouv. Gafsa, Tunisia, 17 February–5 March 1969: UCM 36895-8, 48080, Bled Douarah, 400 m; UCM 36868, 36870-8, 20 km SW Metlaoui; UCM 36899-915 (7 ret.), 22 km SW Metlaoui; UCM 36879-94, 26 km SW Metlaoui, Oued Gifla sand dunes.

The series is remarkably uniform in size; the largest male is 56 mm SVL, the largest female 57 mm, the smallest 44 mm. Scalation and coloration conform in detail with the account for the species and subspecies in Schleich et al. (1996: 400-1). The species has apparently not been recorded previously in Tunisia, although it has in adjacent Algeria.

Acanthodactylus erythrurus lineomaculatus Duméril and Bibron. A single juvenile (UCM 51911), 39 mm SVL, is from 18 mi N Rabat, Morocco, March 1943. It has the divided internasal and azygous scales between prefrontals characteristic of the subspecies (Schleich et al., 1996: 384).

Mesalina olivieri (Audouin). Two hundred eighty-one specimens were collected in Tunisia, all 5 February–10 March 1969 except for one (UCM 36438) taken in spring 1968. Nineteen (UCM 37275-93) are from Gafsa Oasis, the remainder all from Bled Douarah, 400 m (UCM 36438, 37034-37293, 48082).

Most specimens are in the 35–40 mm SVL range; the smallest is 29 mm (14 February), the largest 46 mm (3–4 March). They most closely resemble the Morocco specimen illustrated from life in Schleich et al. (1996: pl. 35, fig. 101); a few are more brightly lined but none as much as the patterns drawn in the same work (1996: 421, fig. 1) from Israel and Tunisian material. The dorsolateral light lines are regularly clearly evident, but usually weak, not sharply delineated. A weaker middorsal light line is evident in a few. The bases of the lateral two rows of abdominal scales are black-flecked in adults, more strongly in males than in females. The sides of the throat are also black-flecked in some.

Mesalina rubropunctata (Lichtenstein). One specimen (UCM 55612) is from Wadi Halfa, Sudan, 9 March 1964. The nasals are separated by contact of rostral and internasal, and small dark spots, presumably reddish in life, are scattered over the dorsum.

Podarcis perspicillata chabanaudi (Werner). Five specimens (UCM 51897-900, 51896) of this strikingly patterned subspecies were taken 10–11 March 1970 near Rabat, Morocco. They differ in SVL from 31 to 59 mm, but all have the same profuse blue specks scattered over the black dorsum, and a blue venter.

Psammodromus algirus (Linnaeus). Seven specimens are available, two (UCM 51917-8) from near Beni Mellal, Morocco, 28 February 1970; and five (UCM 51920-4) from 18 mi N Rabat, Morocco, March 1943. They vary in SVL from 36 to 64 mm. Four exhibit dorsolateral and lateral light lines (a total of four), but the two largest and the penultimate smallest have no visible pattern, perhaps an artifact of the discoloration that has affected all seven.

Sauria: Scincidae

Chalcides mionecton Boettger. A single specimen (UCM 51909) is from 18 mi N Rabat, Morocco, March 1943. The digits all number five, the ear opening is about the size of the nostril, the foreleg from axilla 5 mm, foreleg (from anterior insertion) to ear opening 10 mm. The pattern is as figured by Schleich et al. (1996: 330).

Chalcides o. ocellatus (Forskal). Twenty-seven specimens are in the collection. Fifteen are from Tunisia: UCM 37295, Gafsa, 1 February 1969; UCM 37296-7 (first ret.), Gafsa Oasis, 10 February 1969; UCM 36439-40, 37298-307 (last two ret.), Bled Douarah, 400 m, spring 1968 and 11 February–6 March 1969. In this series, the SVL varies from 42 to 113 mm. The ocellar pattern, much as figured by Schleich et al. (1996: 336) is brightly evident in most specimens; in four, two of them less than 50 mm SVL, ocelli are dim or not evident, a weak linear pattern remaining.

Twelve specimens (UCM 55617-28) are from Wadi Halfa, Sudan, 9 March 1964. SVL varies from 64 to 90 mm. The specimens are somewhat discolored; in only four is the ocellar pattern readily visible. In all others some vestiges of it are evident upon microscopic examination.

Chalcides ocellatus tiligugu (Gmelin). A single specimen (UCM 37294) with the typical dark sides of this subspecies, and 124 mm in SVL, is from 19 km NNW Tunis, Tunisia, 14 March 1969.

Eumeces algeriensis Peters. A single specimen (UCM 51895) was taken 28 February 1970 at Beni Mellal, Morocco, behind the Fortin Guillory. It is a large adult, 161 mm SVL, with the typical dorsal and lateral pattern of the species as illustrated in Schleich et al. (1996: 350, fig 2), extending well below ear opening and to the ninth scale row on flanks. There are four nuchals on one side, five on the other. Striations and ridges or grooves are discernible on most scales of the trunk, limbs and tail, on ventral as well as dorsal surfaces. Intercalary scales are present on all fingers and on the first three toes; they are absent on the fifth toe and present only on the base of the 4th toe.

Eumeces schneiderii aldrovandii (Duméril and Bibron). Three specimens (UCM 37315-7, latter ret.) were taken 18 February–5 March 1969 at Bled Douarah, 400 m, Tunisia. As adults (117 and 124 mm SVL), they conform with expectation in pattern as figured by Schleich et al. (1996: 352, fig. 2c), being uniform light brown above, with very irregular transverse rows of light flecks scale-sized or smaller on about every

third or fourth row of scales; the brown color ends abruptly laterally on the 6th or 7th scale rows and upper edge of the ear opening. Below that level the surface is uniform white, except in one with a few flecks of brown in transverse rows 1–2 scales apart on the edges of scales of the 7th–9th scale rows. The scales are virtually smooth, with little or no evidence of ridges or striations.

In these respects the specimens appear to be typical of *E. schneiderii*, and quite different from *E. algeriensis* with its distinctive ocellar pattern continued low on the flanks, and its striated scales. Those features are perhaps more reliable as taxonomic criteria than the more commonly emphasized ones of number of nuchals and presence of intercalary digital scales, although the latter criteria may usually be valid. In one of the present specimens, five pairs of nuchals are present, and in the other specimen four nuchals are present on one side (the last separated by three paired scales from the third nuchal), and an indeterminate number on the other, the nuchals merging insensibly with the expanded dorsals. Intercalary scales are present on the first two digits of both hands and feet, 1, 2 or none on the third, and are absent on the 4th and 5th digits.

These data suggest that some sort of interaction—perhaps intergradation—between *E. algeriensis* and *E. schneiderii* has occurred in Tunisia. Further material will be required to resolve the problem.

Mabuya quinquetaeniata (Lichtenstein). Four specimens (UCM 55613-6) are from Wadi Halfa, Sudan, 9 March 1964. The smallest is 57 mm SVL, the largest 78 mm. All are discolored, no pattern remaining evident except for a dim light line extending from the supralabial region through the ear opening, above axilla to the groin (visible beyond axilla in only one). No dark lines or flecks are visible. The midbody scale rows are 36 in two, 38 in two, in contrast with the 32–34 rows in *M. vittata*.

Mabuya vittata (Olivier). Nineteen specimens were taken in Tunisia: UCM 37318, 20 km NW Gafsa, 8 March 1969; UCM 37319-24, Gafsa Oasis, 7 March 1969; UCM 37325-30 (two ret.), Oued Baiech, Gafsa, 8 March 1969; UCM 37331-3 (one ret.), Djebel es Stah, nr Gafsa, 8 March 1969; and UCM 19092-4, Zarcis, 13 July 1958.

The largest specimen is 90 mm in SVL, the smallest 57 mm. All specimens exhibit the pattern depicted by Schleich et al. (1996: 355, fig. 1).

Scincus scincus (Linnaeus). Nine specimens (UCM 37334-8, 59071-4, one ret.) were taken near Tozeur, Gouv. Gafsa, Tunisia, in late 1968 and 24 March 1970. They vary from 77 to 92 mm in SVL.

Sphenops boulengeri (Anderson). Eight specimens were taken, all in Gouv. Gafsa, Tunisia: UCM 37308-10 (one ret.), Gafsa Oasis, 1 March 1969; UCM 37311, 37316, Bled Douarah, 400 m, spring 1968 and 25 February 1969; UCM 37312-4 (one ret.), 20 km SW Metlaoui, 5 March 1969.

The largest is 93 mm in SVL, the smallest 45 mm. All except the largest has four narrow dark lines lengthwise on head and neck.

Serpentes: Colubridae

Coluber a. algirus (Jan). Two specimens (UCM 37339-40) are from west of El Hamma, Gouv. Gafsa, Tunisia, 5 February 1969. One (UCM 37340) is of record size, fide Schleich et al. (1996: 479), at 1620 mm in total length, tail 329 mm. The same specimen is unusual in having no supralabials in contact with orbit on either side, inasmuch as suboculars form a complete series between preoculars and postoculars. The dorsal blotches are also exceptionally long, 2–4 scale lengths, separated by light areas of less than one scale length. The other specimen is normal in all respects, with dorsal blotches mostly shorter than, and usually about half the length of, the light interspaces, and the fifth supralabial contacting the orbit on both sides.

Coluber florulentus Geoffroy St. Hilaire. A single juvenile female (265 mm TTL, 60 mm tail), UCM 18918, is from Qustul, Southern Province, Egypt, 29 January 1963. It has 21 median scale rows, all smooth, 211 ventrals, angular; anal divided; 92 caudals; 1-1 preoculars, 1-1 anterior suboculars; 2-2 postoculars; temporals 2-1-2; 9-9 supralabials, 5-6 entering orbit; 10-10 infralabials, 4-4 contacting anterior chinshields.

Two paravertebral rows of gray spots, usually side by side but slightly staggered here and there, a few fused medially in the neck region, 3–5 scales wide, 1.5–2 scales long, separated by lighter interspaces about equally as long as the dark spots; two lateral rows of similar spots alternating with each other and with the dorsal spots, on each side, those in the lower row smallest (one scale long, two wide, encroaching on the ends of the ventrals), those in the middle row half the size of the paravertebral spots; pattern faded posteriorly, tail and posterior fifth of body unicolor light tan. Ventral surfaces unmarked except for the encroachment of the lateral spots onto the ends of the ventrals. No dorsal markings on head; a subocular dark spot, and a large discrete smudge anterior and posterior to orbit.

Schleich et al. (1996: 564) list three species of *Coluber* (*nummifer*, *rhodorachis*, *rogersi*) in Egypt, to none of which the present specimen is referable. *C. nummifer* has a very different pattern (Schleich et al., 1996: 565, fig. 2), 23–25 scale rows (Schätti, 1987: 405), and 0–1 supralabials contacting orbit (Schätti and Wilson, 1986). *C. rhodorachis* has more caudals (113–154), 19 scale rows and a different pattern on head, dorsum and venter (Schleich et al., 1996: 484-5). *C. rogersi* has large middorsal spots very narrowly separated from each other (Schleich et al., 1996: 486, pl. 21), 19 scale rows and no anterior subocular.

Except for the absence of any obvious "symmetrical markings on the head" (Schätti and Wilson, 1986), the present specimen conforms with their dichotomous diagnosis of *C. florulentus*, and Kramer and Schnurrenberger (1963) noted the presence of that species in southeastern Egypt. We suggest that it be added to the known herpetofauna of that country.

Coluber hippocrepis Linnaeus. A single, beautifully marked adult (UCM 37341) is from 1 km W Sedjenane, Gouv. Bizerte, Tunisia, 17 March 1969. Its pattern and scalation are typical.

Lytorhynchus d. diadema (Duméril, Bibron and Duméril). Three specimens were taken, all in Tunisia: UCM 37344, Gafsa Oasis, 7 February 1969; and UCM 37342-3, Bled Douarah, 400 m, 22 February 1969. All three have a peculiarly shaped subocular supralabial, the 5th, with its upper length, below orbit, half again as long as its labial border. An

anterior temporal contacts the 5th supralabial in two, but is separated on both sides of one by the 6th supralabial contacting the lower postocular. The postoculars are 3-3 in one, 2-3 in one, 2-2 in one. In the two from Bled Douarah, the rostral contacts the prefrontals, separating the internasals.

Macroprotodon cucullatus mauritanicus Guichenot. Twenty-eight specimens were taken 14 February–7 March 1969 in Tunisia: nr Gafsa (UCM 37371); Bled Douarah, 400 m (UCM 34345-70, 48083, three ret.). The longest female is 439 mm TTL, tail 67 mm, the longest male 431 mm TTL, tail 80 mm. Four have total lengths of 215–225 mm (and all are black-headed); the next longest is 303 mm in TTL, followed by others 332 in TTL or greater. Six of those over 300 mm in TTL (21) are black-headed; all that are black-headed are brightly patterned; none fall into categories 1 or 3 of Busack and McCoy (1990), who reported on the present series.

Telescopus obtusus (Reuss). A single adult (UCM 36442) is from Bled Douarah, 400 m, Tunisia, taken spring 1968.

Serpentes: Natricidae

Natrix maura (Linnaeus). Eleven specimens are in the collection, three hatchlings from Morocco ("Morocco," 1958, UCM 20090, 20097; 18 mi N Rabat, March 1963, UCM 20091), the remainder from Tunisia: one (UCM 37382, 13 February 1969) from Gafsa; one (UCM 37385, March 1969) from Djebel es Stah, Gafsa; and six (UCM 37383-4, 1 March 1069; 37386-9, one ret., 10 March 1969) from Gafsa Oasis. Seven are hatchlings, the smallest (UCM 20091) 206 mm TTL. The black center of the venter is uninterrupted in all except one from Morocco.

Serpentes: Psammophiidae

Malpolon moilensis (Reuss). Four specimens (UCM 37372-3, 37375, 37377, one ret.) were taken 25 February–5 March 1969 at Bled Douarah, 400 m, Tunisia. All have a flat prefrontal area, one loreal, nasal contacting prefrontals, orbital border of supraocular longer than orbital border of supralabials, preocular separated from frontal, two lateral nuchal dark bars, ventral surfaces white or cream and unpigmented, and dorsal surfaces with a contrasting pattern of three rows of dark spots on each side on a light tan background.

Malpolon m. monspessulanus (Hermann). Seven specimens are from Gouv. Gafsa, Tunisia, one (UCM 36441) taken spring 1968, the others 5 February–5 March 1969. One (UCM 37381) is from W El Hamma, all others (UCM 36441, 37374, 37376-9, two ret.) from Bled Douarah, 400 m. All have a pronounced prefrontal concavity, prominent supraorbital ridges ("beetling brows"), two loreals, nasal separated from prefrontal by contact of internasal and anterior loreal, preocular contacting frontal and prolonged over orbit, reducing orbital border of supraocular shorter than orbital border of supralabials, no lateral nuchal dark bars, ventral surfaces of trunk and tail at least lightly pigmented, and dorsum dark with a complex, ill-defined pattern of small dark spots and, in some, short longitudinal light streaks.

Psammophis schokari (Forskal). Five specimens (UCM 37390-4, one ret.) were taken 25 February–1 March 1969 at Bled Douarah, 400 m, Tunisia. Two of the four specimens at hand have a fine black line lengthwise near the lateral end of each ventral and caudal; one of those two has bright dorsal stripes, whereas in the other they are but dimly evident. Of the two without the ventral lines, one is brightly striped, the other only weakly so. Evidently dorsal and ventral striping varies independently.

Serpentes: Viperidae

Cerastes cerastes (Linnaeus). Twenty-one specimens were taken, all in Tunisia. Fifteen (UCM 37395-408a and 37408b, three ret.) are from Bled Douarah, 400 m, 11 February–7 March 1969; two (UCM 37410-1) from Gafsa, November 1968; one (UCM 37409, ret.) from 4 km W Gafsa, 1968; and three (UCM 37412-4) from near El Hamma, November 1968. All are horned, and none are black-tailed.

Cerastes vipera (Linnaeus). Two specimens (UCM 54124-5) were purchased in Tozeur, Gouv. Gafsa, Tunisia, 24 March 1970. Most of the very slender, short tail is jet black in both specimens.

Acknowledgments

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Herpetology Weekend

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In recent years interest in reptiles and amphibians has burgeoned. There is about every kind of reptile meet or symposium to suit everyone's interest. There are captive-bred-only expos, reptile fairs or swaps, academic and technical captive breeding symposiums, and regional herpetological meetings such as Herpetology Weekend at Natural Bridge State Park, Kentucky.

This gathering is different from most meetings in that it recruits both the general public and those with passions for reptiles and amphibians. It is also sponsored by herpetological societies such as the Greater Cincinnati Herpetological Society, nonprofit organizations such as the Kentucky Reptile Zoo, and state and federal agencies such as the USDA Forest Service, Kentucky State Parks, Kentucky Department of Fish and Wildlife Resources, and the EPA. Herpetology Weekend, in its sixth year, is held once a year, usually during April. It includes lectures and field trips, and is held at one of Kentucky's herp havens, Natural Bridge State Park. Collecting and trade of reptiles and amphibians is prohibited.

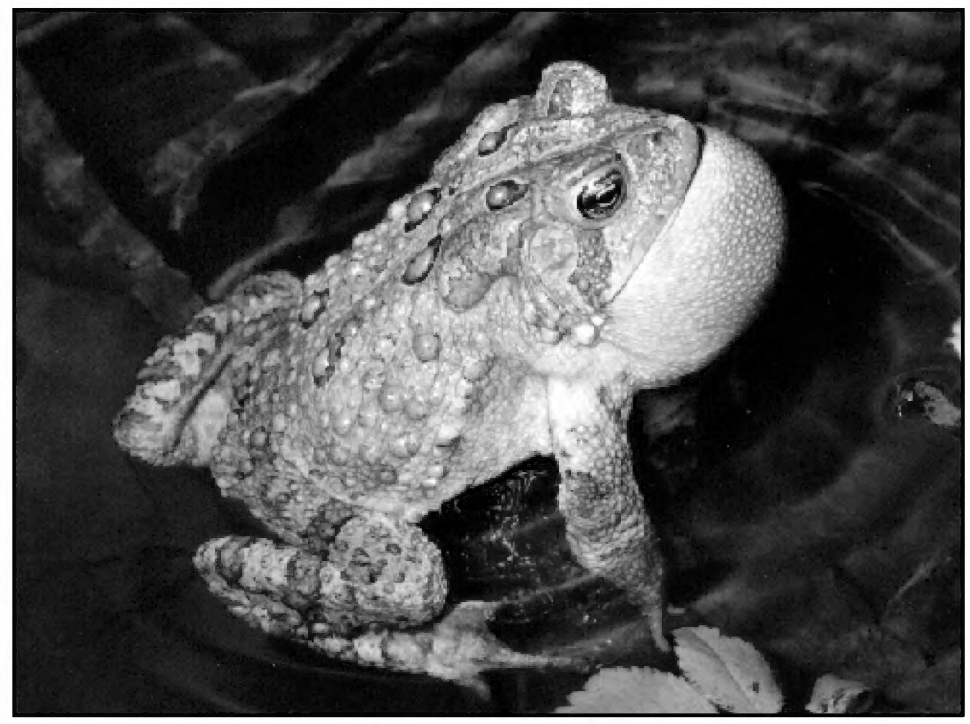
Natural Bridge State Park is known for its many natural rock arches and bridges. It is visited by people from all over the country.

This year the lectures started Friday night at 8:00 P.M. Upon entering the activities center, I was taken aback by the number of children that were present. Children were easily half of the audience. Many children from local counties and other parts of the state were there with their families.

The first talk, by Robin Saunders of the Cincinnati Zoo, was entitled "Amphibians Are Not Just for Bait Anymore." Her talk explained how amphibians were once looked upon with indifference because of their perceived abundance and use for bait. In the early days of zoos, the amphibian keepers were at the bottom rung of the seniority ladder. Amphibians were not greatly appreciated as they are today. However the negative stigma associated with amphibians quickly disappeared as interesting and complex life cycles, medicinal potential in frog toxins, and the use of amphibians as indicator species in our environment was discovered.

The second speaker was Tom Pauley of Marshall University whose talk was entitled, "Tracking Amphibians in West Virginia." Tom Pauley and his 12 graduate students are monitoring populations and studying the natural history of amphibians in West Virginia. They are currently studying the effects of disturbance on amphibian populations. For example, clear-cutting negatively affected all species of the genus *Plethodon*. However, recognizing that clear-cutting was unpreventable, they studied the effects of improving the habitat after the clear-cut, by building ponds. The artificial ponds were utilized by six different breeding amphibian (no *Plethodon)* species within two years and hastened the recovery period of amphibian populations, which is normally 30 years. They also study less obvious disturbances such as hiking trails. Hiking trails are readily crossed by most species of salamanders. However, heavy traveled hiking trails are barriers for some sensitive species such as the Cheat Mountain salamander. Heavily trafficked trails represent barriers because the leaf litter is absent as a result of being trampled and destroyed by hikers. Tom Pauley concluded his talk by addressing the need for monitoring amphibian populations, emphasizing that one does not need a Ph.D. or a Masters Degree to participate in surveys. The only prerequisites are sufficient time, a capacity to follow directions and the ability to identify species.

The night's lectures were concluded and it was time for the field. Although the formal field trips started on Saturday morning, many anxious herpers independently left in search of herps. Mid-April in eastern Kentucky is the prime breeding time for spring peepers, *Pseudacris c. crucifer*, mountain chorus frogs, *Pseudacris brachyphona*, and American toads, *Bufo americanus*. An orchestra of the above-mentioned was heard throughout the night. Although peepers and mountain chorus frogs can be heard throughout the spring and summer, they are very wary and shy. The all-too-familiar scenario is to follow the earsplitting calls of peepers to a pool in anticipation, only to arrive to a victorious mute solitude. The peepers or chorus frogs (they behave the same), it would appear with the help of Houdini, suddenly disappear. The only sound is disappointment. However, during breeding season, males lose all trepidation, and brazenly call as a light is shined upon them. It is a photographer's delight, all the shots of amplexing frogs without the subjects fleeing. That night one did not have to travel far to find them, they were found in roadside ditches and pools.



Calling American toad, *Bufo americanus*. Photograph by Omar Attum.

Green salamander, *Aneides aeneus*. Photograph by Omar Attum.

Red-spotted newt, *Notophthalmus viridescens viridescens*. Photograph by Omar Attum.

Pickerel frog, *Rana palustris*. Photograph by Omar Attum.

American toads, *Bufo americanus*, in amplexus. Photograph by Omar Attum.

Mountain chorus frog, *Pseudacris brachyphona*. Photograph by Omar Attum.

Northern copperhead, *Agkistrodon contortrix mokasen*. Photograph by Omar Attum.

The real field trips started Saturday at 9:00 A.M. There were field trips to suit everyone's needs: frogs, salamanders, snakes, and combinations of all three. The trips were led by some of the state's top herpetologists: John MacGregor, Dan Dourson, Jim Harrison, James Kiser, Mark Gumbert, and Katherine Huie-Netting. Not only were the leaders resourceful, they also answered all questions, both from children and from adults. One particular trip along Indian Creek yielded slimy, *Plethodon glutinosus,* northern dusky, *Desmognathus f. fuscus,* northern red, *Pseudotriton r. ruber,* four-toed, *Hemidactylium scutatum,* and spotted salamanders, *Ambystoma maculatum,* to name a few. A few cold northern copperheads, *Agkistrodon contortrix mokeson,* were found under tin. They were cold and remained there all day, even after repeated lifting and lowering of tin by people who wanted to see the these particularly beautiful copperheads. Copperheads could easily be one of the most common snakes in this area. Copperheads comprise one-quarter to one-half of the snakes encountered during summer night drives. Most are not as beautiful or motionless as these specimens were. In addition, a dead northern redbelly snake, *Storeria o. occipitomaculata,* missing its head, was also found, possibly an unfinished meal of a small mammal or bird. After the morning field trip, everyone congregated back at the lodge. Everywhere people were sharing their finds, especially the kids, they would brag and spread their arms, it was this big!

Cold weather and rains canceled the afternoon snake field trip led by Jim Harrison of the Kentucky Reptile Zoo. He instead entertained the crowd with a slide show on snakebites. The amphibian seekers however were not let down. One group searched for the green salamander, *Aneides aeneus*. The green salamander is a species that until a few years ago was under consideration to be federally listed as threatened in certain parts of its range. This secretive, beautiful salamander with a dark body littered with green flecks, is found concealed in the sandstone outcroppings and cliffs at Natural Bridge State Park and adjacent Red River Gorge. The guides, John MacGregor and Dan Dourson, had led us to a well traveled hiking trail in the Red River Gorge where everyone searched for them in the cracks, gaps, and under rocks of sandstone ledges. Many of us realized that we had been to this site often before, to hike and enjoy the beautiful scenery. We started to wonder how many times we ourselves, hikers and rock climbers had passed up or overlooked this beautiful and diminutive salamander. Maybe that is the reason they still exist in this area. The green salamander has evolved to live life in the sandstone outcroppings and cliffs. It has three main adaptations that allow it to thrive in such habitat: flat body and head to maneuver in small openings; large toe pads to increase surface area for traction; and a prehensile tail. These adaptations allow it to be a skillful climber and it has been coined the "gecko" salamander. The rock climbers of the area are surely envious.

Later the group investigated vernal pools and ponds where American toads were calling and breeding. The red-spotted newts, *Notophthalmus v. viridescens,* were feeding on eggs of the spotted salamander, the mountain chorus frog, and the pickerel frog, *Rana palustris*. The red-spotted newt is a voracious predator of amphibian eggs, tadpoles, and small arthropods. In many ponds and pools, the red-spotted newt is the top predator in the food chain. Temporary pools are a very important habitat for amphibians. The dry summer months kill off any fish that may have been introduced by waterfowl or through human activities. The introduction of fish to a pond can virtually eliminate any existing amphibian population. The second and last field trip was concluded.

After dinner, renowned naturalist speaker Scott Shupe, of the Natural History Educational Company, gave a live reptile presentation. The children were awed by the albino Burmese python, American alligator, and native nonvenomous and venomous snakes. The Indian snake test was performed on two brave young volunteers. The Indian snake test is performed by two people holding a large stick at each end. A snake, in this case a rat snake, is placed in the center where it then crawls to either side. The young children are considered brave when they still have the stick in their hands when the snake slithers to their side. Both children proved to be brave, although they left permanent fingerprints and it took some time for their knuckles to regain their natural color. Two novel and simple ideas were also presented. First, what should hikers do if they encounter a snake in the outdoors. Scott laid a timber rattlesnake on the floor, and walked around it. The second idea was a question addressed to the audience: "Why hasn't the rattlesnake charged and attacked anyone?" Scott explained to the kids that snakes bite only in self-defense and to eat. Therefore humans are safe from snakebites as long as they don't step on, handle or attempt to kill them. The second presentation, by Dave Dennis and Eric Juterbock of Ohio State University, which concluded the night, was a slide show synchronized to music, entitled "Amphibians of the Appalachians." The slides were stunning, revealing the radiant-looking amphibians of the Appalachians.

The Sunday morning session was a workshop on "Photographing Amphibians and Reptiles" by Dave Dennis and John MacGregor. This session allowed amateur photographers to ask questions and improve their photography technique. The afternoon session, which was the final and last session of herpetology weekend, was a live venom milking of a king cobra by Jim Harrison of the Kentucky Reptile Zoo. The Kentucky Reptile Zoo is a nonprofit organization. The zoo conducts outreach school education programs. It also provides pharmaceutical companies with venom for research and anti-venom production. The milking entailed Jim Harrison catching a 15-foot king cobra in its walk-in enclosure. This is much trickier and more dangerous than it sounds. As soon as the cobra's enclosure door was opened, it became erect and spread its hood. It took four failed strikes by the cobra before it was subdued and captured for the milking. It was a mercurial and adrenaline pumping event. It was just another day at work for Jim Harrison, but to the rest of us marked the end of Herpetology Weekend.

For information about Herpetology Weekend, call the Stanton Ranger District at (606) 663-2852.

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Comparison of Three Amphibian and Reptile Population Estimation Methods Used at D'Arbonne National Wildlife Refuge, Union Parish, Louisiana

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Abstract

Three methods of population estimation of reptiles and amphibians are explained, including visual surveying, relative estimation using pitfall traps and catch–effort estimation using pitfall traps. The most accurate estimation of a population of *Bufo woodhousii fowleri* yielded 9.5 individuals per 1000 m^2. Amphibian population estimates are onerous and prone to error, but many of these factors were avoided in this study to make the results fairly reliable.

Introduction

Worldwide declines in populations of amphibians due to habitat destruction, acid rain, water pollution and depletion of the ozone layer are accelerating at an alarming rate. In order to identify endangered populations of amphibians, an accurate method of population estimation is necessary. This study will compare three main population estimate methods including visual surveying, relative estimate using partial-barrier pitfall traps, and catch–effort using partial-barrier pitfall traps. Although the primary focus is on amphibian population estimation, the inclusion of reptiles was carried out to elucidate the effectiveness of the different methods on both classes of organisms.

Little work has been done with amphibian populations involving the visual survey method because it samples such a small part of the natural population. However, extensive work has been done with the latter two methods with varying levels of success (Halley et al., 1996; Brown, 1997). Because the only species of amphibian or reptile caught using the pitfall traps was *Bufo woodhousii fowleri*, previous work using toads is relevant to this study.

B. w. fowleri is one of three members found in the *B. woodhousii* complex, an aggregate of three subspecies that have uncertain taxonomic status. A recent study by Sullivan et al. (1996) compared variation in advertisement call and body size across the range of the *B. woodhousii* complex and concluded that *B. w. fowleri* should be given full species status. A confounding variable to identification in the field involves a zone of intergradation between *B. w. fowleri* and *B. americanus* in the study area. However, unless individuals had a brick red color with a distinctively curvy post-orbital crest, they were most likely *B. w. fowleri* (Dr. N. H. Douglas, pers. com.). Most toads will burrow underground during the day to prevent overheating and evaporative water loss, becoming active only at night (O'Connor and Tracy, 1992).

The objectives of this study are to test the three methods of population estimation of reptiles and amphibians listed above and to find the most accurate method. The most accurate method can have applications to population estimation of organisms that are suspected to be endangered, and can assist in better management of wildlife refuges throughout the world.

Materials and methods

All three experiments were conducted at D'Arbonne National Wildlife Refuge just north of West Monroe, Louisiana, in Union Parish. The first method, visual surveying, was conducted on 19 September 1997 on a warm, sunny day. Little rainfall had reached the site for weeks prior to the study, and consequently the wooded habitat was very dry (Figure 1). Eight volunteers fanned out over a 50 m range and searched for reptiles and amphibians by looking under trees, logs, bark and other debris in the habitat. Searching proceeded for about two hours and all species were identified and numbers of individuals recorded. Size of areas searched ranged among individuals from about 1000 to 3000 m2. A short search of an area adjacent to a pond (Figure 2) was conducted for about 30 minutes.

The other two experiments, started on 19 September 1997 and 27 September 1997, respectively, used pitfall traps and drift fence. Approximately 2.5 m lengths of plastic were arranged in three "T"s in areas of wooded habitat and posi-

Figure 1. Woodland habitat where the visual survey method was employed.

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Figure 2. Pond habitat where the visual survey method was employed. A similar site was used for the relative estimation and catch–effort experiments.

tioned flush with the ground using wooden stakes. Plastic cups were inverted and taped together with a superiorly cut hole and buried along the terminal margins of the plastic barriers so that the bottoms of the cups were flush with the ground. Holes were pierced in the bottoms of the cups to allow for drainage in case of rainfall. The traps surveyed an approximate 1000 m^2 area of woodland forest adjacent to a firebreak on the eastern side and a bayou on the western side on the southeast corner of the study area (Figure 3).

The relative estimate method involved checking the traps every 24 h, recording the number and species of individuals caught, and then releasing the captives in close proximity to the study site where they were captured. This experiment had a seven-day duration. Immediately following the penultimate study was the catch–effort method which involved checking the traps every 24 h, recording the number and species of individuals caught, and releasing the captives well outside of the study site. This experiment also had a seven-day duration.

Table 1. Summary of specimens seen during the visual survey.

		Species	Number seen
Habitat	Wooded	*Anolis carolinensis*	5
		Eumeces fasciatus	3
		Scincella lateralis	2
		Hyla cinerea†	1
	Pond	*Rana catesbeiana*	2
		Rana c. clamitans	2
		Rana sp.‡	3
		Lampropeltis getula holbrooki	1

† Animals sighted were all diurnal species, with the exception of *H. cinerea*, which was spotted in an inactive state.

‡ The *Rana* sp. row includes sightings of unidentified anurans, which most likely belonged to *R. catesbeiana* or *R. c. clamitans*.

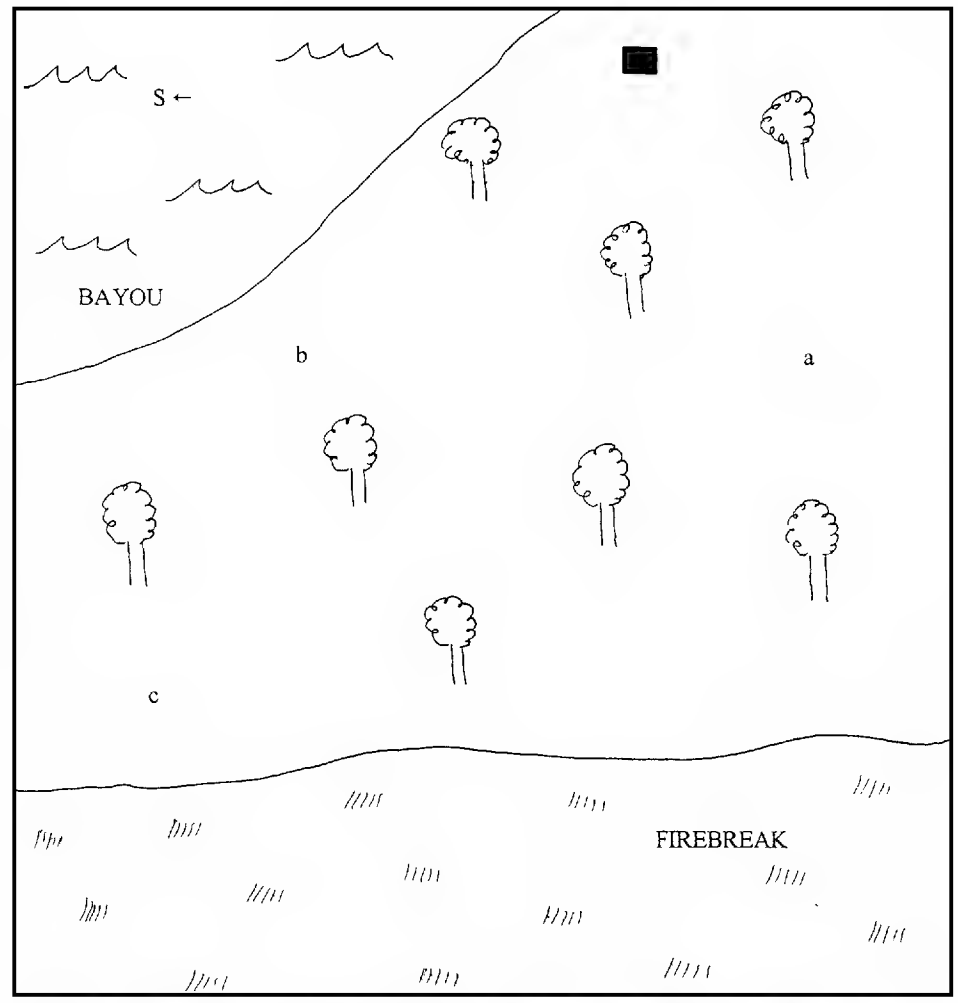

Figure 3. The study site was approximately 1000 m^2, with one drift fence in wooded habitat (a), one fence adjacent to the bayou (b), and one fence adjacent to the meadow-like firebreak (c). Because the drift fences were not contiguous, they were considered to be partial barriers by Brown's (1997) classification. Scale bar = 5 meters.

Results

As seen in Table 1, a total of seven species of reptiles and amphibians were discovered using the visual survey method. *Anolis carolinensis* was the most abundant organism in the Woods habitat, while *Rana* species were the most abundant organisms in the Pond habitat. One species of amphibian was found in the woodland habitat while one species of reptile was found in the Pond habitat. Based on this information, no population estimate could be calculated with any level of confidence.

The relative estimate yielded an average of 2.8 toads/day, all of which were *B. w. fowleri*. The lowest number of individuals caught was one after 48 h, and the highest was 6 at 96 h. Based on this data, the population estimate is about 6 toads per 1000 m^2.

All individuals caught in the catch–effort experiment were *B. w. fowleri* as well, with more or less decreasing numbers of individuals with increased time. The data were plotted in the form of catch per unit effort on the y-axis versus accumulated catch on the x-axis. Using a simple algebraic formula, the line of best fit was estimated to cross the x-axis at 9.5, giving the estimated population using this method.

Discussion

Although the visual survey method did yield a significant difference in fauna between the two habitats studied, little information about population estimation can be synthesized from the data. Since the study was conducted during the day, crepuscular and nocturnal organisms were excluded, with the exception of one *Hyla cinerea* individual, which was found

resting against a tree trunk. Also, the number of individuals collected would have increased if the habitat had received a significant amount of rain prior to the study.

The other two methods were better for actual population estimates of the sole species caught, *B. w. fowleri*. Unfortunately, population models for amphibians are difficult to parameterize, and missing information must often be borrowed from other sources, i.e., unrelated studies, in order to accomplish a meaningful study (Halley et al., 1996). This sentiment carries over to this study because several vagaries involving the traps and the characteristics of the study species could have caused errors.

In a recent review of anuran population estimate methods, Brown (1997) found that less than 1% of anurans trapped in pitfalls escaped, but that the use of partial barriers (such as those used in this study) tended to have biased samples and that if barriers were to be useful in the future they should be complete. For example, if sickly animals or individuals of only one sex were prone to trapping, the population estimate would be inaccurate. In a population study on the natterjack toad, *Bufo calamita*, Denton and Beebee (1993) found that in high-density populations individuals had retarded growth and lower overall fitness, and had to forage more widely than individuals in low-density populations. Also, the common toad, *Bufo bufo*, may have natural populations with 3:1 male-to-female ratios which would bias the data also if there was differential susceptibility to trapping between the sexes (Halley et al., 1996).

Despite these concerns, several factors did support the integrity of the study's results. The study was conducted in late September, which is safely outside of the breeding season for *B. w. fowleri* (Sullivan, 1987). This is important because during the breeding season, males form leks and call without moving too far within their home range (Given, 1996). This would have undoubtedly biased the trapped individuals towards being female. Another factor was the short duration of the experiment. Since stochastic factors influence the annual population of toads in an area, the short duration of this study avoided comparing populations from different years which could have been a confounding variable (Beebee et al., 1996).

In conclusion, the visual surveying method is not a valid way to estimate population sizes of reptiles or amphibians. The catch–effort method gave the most accurate estimate of the toad population size because of its direct extrapolation of the data.

Acknowledgments

I would like to thank Dr. Richard Buchholz and the Ecological Methods class of Northeast Louisiana University for help and inspiration. Drs. Neil H. Douglas and John L. Carr provided invaluable information as well.

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Currently Happening Stuff

reported by Gary Kostka

I'll show you mine if you show me yours . . .

June is traditionally the month in which the CHS holds its annual Show and Tell meeting and this year was no exception. Members attending the June 24 meeting were encouraged to bring along a favorite herp which they could display and discuss during the program portion of the evening's proceedings. My report on this event is brief and lacking in detail as I was unable to attend, but word has it that this year's Show and Tell had all the ingredients of fun and fascination that continue to make it one of the most popular and well attended CHS meetings. I was especially enthused to learn that quite a few new faces as well as a host of interesting critters came forward to grab their share of the limelight this year. I hope that everyone who took part (either passively or actively) had a fantastic time and will continue to attend general meetings as well as participating in future Show and Tells.

What I did on my summer vacation . . .

While CHS members at the June general meeting were busy with their showing and telling, yours truly was checking in at Cincinnati's Airport Holiday Inn in preparation for the 22nd annual meeting of the International Herpetological Symposium. Capably hosted by the Greater Cincinnati Herpetological Society, this year's IHS ran from Thursday, June 25, through Saturday, June 27, and was loosely based on the theme, "Captive and Wild Snakes: Are They Similar?"

I spent three wonderful days in herp heaven attending presentations featuring a lineup of speakers that read like a veritable "Who's Who" of herpetology. It was thrilling for me to have the opportunity to see and hear so many herpetological pundits, who up until this event were known to me only through their published material. Reading the words of such noted herpetologists as Gordon M. Burghardt, Joseph T. Collins, Sherman Minton and David Chiszar had always proved fascinating and informative, but seeing these men in person as they described their herpetological endeavors helped give me a greater feeling for the passion and commitment with which they pursue their life's work.

A number of the speakers at the IHS were known to me from presentations that I had been privileged to see them give at past CHS meetings and/or Midwest Herpetological Symposia. Among these familiar faces were Harry Greene, Bernard Bechtel, Neil Ford and John McGrath. Noted author and local CHS member John C. Murphy was also there and had the distinction of delivering the final presentation at the IHS, an overview of the herpetofauna of Trinidad and Tobago.

In all, some 20 presentations covering aspects of behavior, ecology, taxonomy and natural history of a wide variety of snakes were given over the course of the three-day event. Unfortunately, for the sake of brevity I cannot mention all of the distinguished individuals who took part nor the material they covered, but I will say that I found each of the talks extremely interesting and in many instances I found myself wishing that the speaker had more than the allotted half-hour in which to delve into his subject. Lest you think that the IHS was devoted entirely to the study of serpents, I should include that there were a number of presentations featuring other herps including salamanders, geckos and Komodo dragons.

Joe Collins gave a humorous presentation on the early history of the Ohio Herpetological Society, a group which he was instrumental in founding during the late 1950s. The OHS went on to become the Society for the Study of Amphibians and Reptiles when its membership base was found to have expanded well beyond the Midwest region of the U.S. Currently, the SSAR is the largest international herp society in the world.

Well known herp entrepreneur Bill Love was there, and he too dug back into the historical files for his fascinating presentation on the evolution of the herpetocultural phenomenon. Bill traced the dramatic rise of herpetoculture from an oddball cottage industry to its present-day big-business status with a fantastic collection of slides depicting many of the pioneers in the field and the animals with which they worked. He also solicited those present for contributions of any information or photographs relative to the topic of his presentation for possible inclusion in a book documenting the history of herpetoculture which he is currently developing. So if you've got any interesting photos or anecdotes in your files that fit the above criteria, you might want to contact Bill. Who knows, your contribution just might make the book.

Following the conclusion of Thursday's and Friday's presentations, workshops covering the practical aspects of lizard, turtle and amphibian husbandry, herp photography and environmental technology were offered. These sessions were 90 minutes in length and allowed ample time for the experts conducting them to disseminate a great amount of useful information in addition to fielding the myriad questions put to them by an inquisitive audience. I've found that the workshop format can provide a valuable source for new ideas in a variety of herp-related disciplines because of the free-flowing exchange of information that takes place between the experts and those in attendance. This year's IHS workshops proved to be no exception.

The IHS provided herp enthusiasts with the means to unwind at the conclusion of each day's information-packed sessions with a number of welcome diversions. On Thursday evening, an appreciative crowd was treated to three wonderful

slide shows presented by Kraig Adler, David Dennis and Eric Juterbock, titled "Herpetology of the West," "Herpetological Namesakes," and "Amphibians of the Appalachians." Each half-hour presentation featured a multitude of beautiful slides projected on three adjacent screens and synchronized to background tracks of classical or symphonic music that were well suited to the subject matter being depicted. Six computer-controlled slide projectors were incorporated, enabling the creators to achieve some truly stunning visual effects. At times, individual images of herps might be seen on each screen only to dissolve into a panoramic view of their habitat that stretched across all three screens. This was the first time that I had ever experienced a slide presentation of such creative and technical intricacy and I must say that I found it breathtaking.

A sumptuous banquet provided the opening to Friday evening's festivities. Hungry herpers dined on entrees of swordfish, pork or chicken and I heard nary a complaint about the quality of the meal.

Following dinner, Kraig Adler stepped up to the podium and delivered a fascinating presentation on the herpetofauna of China. Kraig, one of the founding members of the Ohio Herpetological Society/SSAR is currently with Cornell University's Section of Neurobiology and Behavior. He co-authored, with Chinese herpetologist Er-mi Zhao, *Herpetology of China*, and his presentation covered many of the unusual herps which he encountered during the course of his extensive fieldwork in that little known land.

Midway through his presentation, Kraig took an unexpected turn and devoted a few moments to lampooning fellow OHS/SSAR founder James B. Murphy. Kraig had the audience howling with laughter as he wryly commented on a number of slides depicting various stages of Jim's life from infancy through adulthood. Jim (who was in the audience) was totally taken by surprise by this sudden focus of attention upon himself, but appeared to enjoy Kraig's impromptu hatchet job on his character more than anyone.

The banquet concluded with an auction of herp-related items donated by the host of vendors who had set up shop at the 1998 meeting of the IHS. Among the items available for purchase were books, prints, husbandry equipment and handcrafted art objects. Joe Collins served as auctioneer and his dry wit and nonstop stream of good-natured banter kept the bidding lively and the laughter flowing.

The 22nd annual meeting of the IHS concluded on Saturday evening with a visit to the Cincinnati Zoo. A picnic dinner was provided featuring burgers brats and hot-dogs with all the fixin's as well as liquid refreshments of both the foamy and fizzy variety. The only downside to this slice of Americana was the weather, which could only be described as sultry with temperature and humidity both hovering around the mid 90s.

Après chow, the zoo's Reptile House and Insect House were made available for behind-the-scenes tours. I'm normally not a big fan of insects, but I found the displays in the recently established invertebrate facility to be extremely interesting. The fact that the entire building was air conditioned (unlike the exhibit area of the herp facility) made the time I spent there all the more enjoyable.

Thanks to the IHS officers and board of directors, the Greater Cincinnati Herpetological Society and especially to Host Committee Chairman Pete Strimple for helping to make this year's IHS such a magnificent experience. Next year's meeting of the IHS is slated for San Diego and promises to be a fantastic time. Now let's see. . . . Maybe I can afford it if I make both my kids sit in the same seat on the plane.

Romanian Herps and Local Experts . . .

The July 29 general meeting of the CHS featured a program known as Expert's Corner. Those in attendance had the opportunity to take part in any of several mini-workshops conducted by CHS members who are considered by their peers to be proficient in their knowledge of a particular group of herps. Ron Humbert led the chelonian chat session; Lori King-Nava and Gary Fogel lent their lizard learning to the mix; Tanya Maris and Mike Dloogatch served as serpent sages. Veterinarians and CHS members Dr. John Bruederle and Dr. Byron De La Navarre were also available to answer any and all questions regarding herp health.

Prior to breaking up into individual groups for Experts' Corner, the CHS was privileged to hear a short presentation on the current status of the herpetofauna of Romania from Zsolt Csaba Török, a herpetologist with Romania's Danube Delta Research and Design Institute. Zsolt (a.k.a. Joe) was in Chicago for a workshop on the conservation of aquatic environments conducted by the Conservation Training Consortium (CTC) and hosted by the Shedd Aquarium. CHS member Jenny Picciola, an employee of the Shedd, offered Joe the opportunity to speak at the July general meeting and he was gracious enough to accept.

Joe's work with the DDRDI involves studying the Danube Delta ecosystem and helping to determine methods necessary for land development to occur in that region without adversely effecting its fragile wetland habitat. At 600,000 hectares, the Danube Delta is the largest wetland region in Europe. It was encouraging to hear that this prime herp and waterfowl habitat is beginning to make an ecological comeback following many years of abuse and neglect suffered at the hands of Romania's former Communist dictatorship.

Following Joe's presentation we broke for a short intermission and then it was time to carry on with the Expert's corner portion of the evening's program. Being a dyed-in-the-wool ophidiophile, I decided to see how the other half lives and so chose to sit in on the lizard and turtle sessions.

The lizard workshop had a nice mix of novice and veteran herpers discussing topics ranging from strategies for the incubation of leopard gecko eggs to the subtle taxonomic differences which exist between white-throated and savannah monitors. It was especially gratifying to watch the younger participants as they seized the opportunity to pick the brains of the group's more saurian-savvy members.

Next, it was on to the turtle workshop where Ron Humbert was leading a fascinating discussion on the nesting habits of

wood turtles in the wild. I was amazed to learn that a female wood turtle will often dig a false nest if she knows she is being observed. She will postpone oviposition until she has moved to a site where she feels better able to conceal the location of her nest.

Thanks to all those who lent their expertise to the Expert's Corner sessions, especially Drs. Bruederle and De La Navarre who, as usual, were more than generous with their time and knowledge. Thanks once again to Joe Török for sharing a bit of his native Romania with us. Have a safe trip back to your homeland, Joe, and best of luck in all your future endeavors.

Splendor in the grass . . .

I'm pleased to report that Sunday, August 2, marked the resurrection of the CHS picnic, an event which the membership had all but given up for dead in recent years due to a profound lack of interest. Members and their families gathered at the Catherine Chevalier Woods where they enjoyed each others company and the beautiful weather as they barbecued, played volleyball, raced turtles and generally had a grand ol' time.

It seems the world of CHS volleyball is currently dominated by the women of the Society, as their team handily defeated the men's squad in each of two matches. I was not at the picnic to witness this humiliation, but a number of women who were there made absolutely sure that I was aware of it so that I would not fail to include it in this report. The games might not have been played at all without the services of Perry Ross, who eagerly tackled the assignment of untangling the hopelessly snarled volleyball net. Perry's diligent efforts eventually paid off, the net was erected, and alas, the rest is history.

The turtle races were dominated by CHS President Steve Spitzer's entry, a spunky little box turtle whose name I do not know. It seems that the other box turtles involved in the races were all from the Ron Humbert stables. At the July general meeting, Ron had boasted that anyone foolish enough to pit one of their own racing turtles against his thoroughbreds had best prepare themselves to witness the sight of their animal eating the dust of his as they sped away to victory. It seems as though everyone heeded this warning with the exception of Steve Spitzer, who was the only person bold enough to bring along a turtle to challenge Ron's vaunted racers. Well if CHS turtle racing is anything like CHS volleyball, the results indicate that Steve's turtle must have been the lone female contestant.

Thanks to Audrey Vanderlinden for taking it upon herself to bring back the CHS picnic. This society can only be as enjoyable as the members are willing to make it, and Audrey's gone the extra mile this year in bringing the good times back to the CHS.

Herpy trails to you until we meet again . . .

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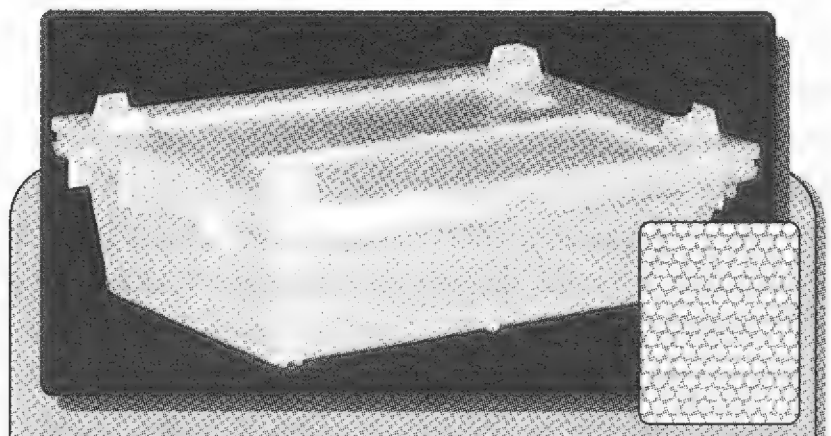

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by Ellin Beltz

More reptile busts

• An August 7, 1998, U.S. Fish and Wildlife Service (USFWS) news release reads: "A five-year investigation by USFWS special agents of illegal international trade in reptiles resulted in the August 6 arrest of Tommy Edward Crutchfield. Crutchfield, a U.S. reptile dealer, is charged with wildlife smuggling, conspiracy, and money laundering. He is the 18th person charged to date in this wide-reaching case involving wildlife trafficking that spans six continents. Crutchfield was apprehended by Federal authorities in Miami as he returned to the United States after being expelled from Belize. The former Florida businessman has spent the last five months in jail in Belize fighting that country's February 28 expulsion order. He now faces U.S. charges based on his alleged involvement in a major international reptile smuggling ring. Last October, a Federal grand jury in Orlando, Florida, returned a multi-count indictment against Crutchfield, his wife, two former employees, and two other individuals based on the Service's ongoing scrutiny of the highly lucrative black-market reptile trade. The indictment alleges that the six were part of an international smuggling ring that is believed to have brought hundreds of rare and endangered snakes and tortoises out of Madagascar into Germany. From there, the animals, worth hundreds of thousands of dollars, were smuggled into the United States and Canada where they were sold to wildlife dealers and private collectors. Protected reptiles from Australia, Indonesia, and various South American and Caribbean countries were also traded. The smuggled reptiles, which were typically concealed in suitcases and transported aboard commercial airline flights, include highly prized Madagascar tree and ground boas, radiated tortoises and spider tortoises—species that occur naturally only in Madagascar. . . . These animals, and the other reptiles allegedly smuggled, purchased, and sold, are protected under the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)—a global agreement that regulates world wildlife trade. Crutchfield, who was named in all 10 counts of the indictment returned by the grand jury in October, is charged with multiple offenses of smuggling, violations of the Lacey Act (a Federal statute that allows the United States to prosecute individuals for violating international wildlife protection laws, including CITES), conspiracy, and money laundering. If found guilty, Crutchfield could be sentenced to up to five years in prison and fined as much as $250,000 on each smuggling and Lacey Act count. Conviction on the money laundering charges could result in prison terms of up to 20 years and penalties as high as $500,000 per count. Crutchfield, formerly the president of Tom Crutchfield's Reptile Enterprises, Inc., located in Lake Panasoffkee, Florida, was generally considered one of the largest reptile importer/exporters in the United States before he left the country in the spring of 1997. He was on supervised release following completion of a five-month prison sentence for a 1995 conviction for smuggling endangered Fiji Island iguanas when he fled to Belize after being notified by the Justice Department that he was under investigation. He also faces potential penalties for violating the supervised release. The reptile investigation has already produced significant results, according to Service law enforcement officials. In addition to the charges against Crutchfield and his associates, four individuals from Germany, South Africa, Canada, and Japan have been arrested and successfully prosecuted in the United States. Of these, German citizen Wolfgang Michael Kloe received the stiffest sentence—a $10,000 fine and 46-month prison term—after pleading guilty to six counts including conspiracy, smuggling, money laundering, attempted escape and Lacey Act violations. Three other Germans charged in the case remain at large. The Service's investigation of the illegal reptile trade has also led to charges in the United States against three Florida residents and a European for dealing in reptiles. One of the Florida residents, Matthew Lerer, was sentenced June 25 to six months electronically monitored home detention, 100 hours of community service and three years' probation. Friedrich Karl Artur Postma of the Netherlands, who was stopped at Orlando International Airport last August when he tried to smuggle in 13 radiated tortoises stuffed inside five socks, was sentenced to one year in jail and a $3,000 fine. In addition to these charges in the U.S., authorities in Germany and Canada have taken legal action against two Germans, a South African, and a Canadian for their involvement in illegal reptile trade. 'As the world's largest importer of wildlife, the United States has a special responsibility to prevent the illegal exploitation of all imperiled species,' Clark said [the news release does not identify Clark]. 'The record of indictments, arrests, and prosecutions for reptile smuggling from the past two years shows that the Service, the Department of Justice, and many of our international counterparts are committed to finding and stopping those who try to profit from protected wildlife. I would like to thank law enforcement authorities in Canada, Germany, the Netherlands, and now Belize for their assistance in and support of this investigation. This case should send a clear message to those who traffic in rare and endangered reptiles that profiteering at the expense of wildlife will not be tolerated by the United States or by the world community.'" [USFWS news releases are also available on the World Wide Web at <http://www.fws.gov/r9extaff/pubaff.html>. They can be reviewed in chronological order or searched by keyword. This release from Jim Harding. For more information about the case, contact Craig Rieben <craig_rieben@mail.fws.gov>, Sandra Cleva, (703) 358-1949, or Mitch Snow, (202) 208-5634.

• A wildlife exhibitor in Port St. Lucie, Florida, was arrested for allegedly feeding kittens to Burmese pythons. Wildlife officers removed two pythons from the man's home. [June 4, 1998: Baton Rouge, LA *Advocate*, from Ernie Liner, and Little Rock, AR *Democrat-Gazette*, from Bill Burnett]

A kindly word for toads

Sue Stocker, of St. Tiggywinkles Wildlife Hospital in Haddenham, England, said, "Every year, hundreds of toads are run over on the roads as they attempt the journey [from over-

wintering area to breeding pond]. We should be trying to help them as they are very good to have in your garden because they eat all the pests. I have heard of people helping the toads cross by putting them in buckets and carrying them across.... Maybe signs could be put in place warning drivers that the toads are crossing." [*Bucks Free Press*, April 18, 1998, from Kim and Wes von Papineäu]

Scent-sible lizards

Two Parisian researchers working with the common lizard, *Lacerta vivipara*, found that even in this species where the mother has no input rearing the young, juvenile lizards preferentially sought shelter in spots smeared with their mother's scent. The researchers say that identifying their parent "is likely to have some biological relevance," and suggest that it may have something to do with dispersal according to *Science News*. [153:24, June 13, 1998, from Mark Witwer]

More reptiles bite

• "An Oak Park [Michigan] man's ill-advised attempt to catch a massasauga rattlesnake is a startling reminder that there are, indeed, poisonous [sic] snakes in Metro Detroit. Matt Stefanson, 31, of Oak Park was in serious but stable condition Wednesday at POH Medical Center in Pontiac, recovering from a bite he got from a rattler at a county park in Oakland County's Addison Township. Stefanson spotted the 2-foot-long rattler along a path, grabbed it behind the head but relaxed his grip—allowing the reptile to sink its half-inch fangs into his thumb. The eastern Massasauga rattlesnake is the only venomous snake found in Michigan—and then only in the Lower Peninsula. The grayish-brown reptile likes wetlands, eats rodents, and grows to between 2 and 3 feet long. The lesson everybody should learn from Stefanson's encounter, said Lynn Conover, a naturalist at Independence Oaks County Park in Clarkston, is to leave them alone. 'Most people get bit by snakes when they pick them up or step on them,' Conover said. 'Snakes will retreat from a disturbance.' Since 1993, the state Department of Natural Resources has had Michigan's rattlesnake under study as a 'species of special concern.' Runaway suburban development 'is reducing habitat, especially in Oakland County,' Conover cautioned. Reptiles can pack up and move, 'but how well they survive that move is debatable,' Conover said. 'They don't adapt well.' She said the massasauga leaves a scent trail behind it so it can find its way home. When its home is destroyed, the reptile's scent trail leads it nowhere. The eastern massasauga snake is part of the rattlesnake family. It is also the only poisonous [sic] snake in Michigan. Measuring two to three feet long, the snake is covered in a camouflage pattern of brown and black with a black belly. Other features include vertical cat-like pupils and a rattle at the end of its body. The massasaugas are typically shy in nature. Those that encounter them should be very cautious. They live in wooded areas, swamps and wetlands. Their diet consists of lizards, frogs, birds, insects, mice and rats. Life expectancy is 14 years." [*Detroit News*, May 21, 1998, from Jim Harding]

• A 10-year-old boy was attacked by a 4-foot pet python at a neighbor's house in Phoenix, Arizona. A Fire Division Chief said that he didn't know what caused the attack, saying that "the snake probably just was doing what snakes do." Fire personnel dug the snake's fangs out of the boy's face and pried it off his arm. The boy was taken to hospital, the snake remained at home, but the "appropriate authorities" were notified. [*Tribune*, August 8, 1998, from Tom Taylor]

Good news for native water life

As of July 8, "the National Park Service will ban personal watercraft such as Jet Skis from all National Parks, including nine where they are now allowed, under new proposed rules. The watercraft would be allowed at 11 national recreation areas and two national seashores. The Park Service said personal watercraft are 'often operated in an aggressive manner,' leak oil and gas and cause frequent complaints about noise and unsafe operation. 'This list could obviously change based on the number and type of comments we receive,' said Dennis Burnett of NPS. [*GREENLines* #666, from Roger Featherstone] More information at <http://www.nps.gov>

Pets of the 90s

• A British program "TV Animal Hospital" broadcasts from the RSPCA Hospital in Putney. "Week after week . . . we are seeing lizards being brought in with no appetite and lethargic. On being X-rayed, they are found to have thin, fragile skeletons caused by a lack of calcium and are often dehydrated. If you want to have an exotic creature, you must study their needs and be able to provide for them. This does not come cheap and takes a lot of time," reports *The Surrey Comet*. [May 9, 1998, from Kim and Wes von Papineäu]

• "A block of flats was evacuated and West Wycombe Road closed as fire tore through a boarded-up building on Tuesday. [A 27-year-old] resident . . . carried his two lizards and two treefrogs to safety at the nearby White Horse Pub, where he is chief barman" according to the *Bucks Free Press*. Two other neighbors were at work and returned from work to rescue their five pet rats. [February 28, 1998, from Kim and Wes von Papineäu]

Deja view?

Those who have visited the building in Chicago's Lincoln Park Zoo which used to house Eddie Almandarz and his fabulous hot herp collection may have noticed that not only is the reptile house not the reptile house any more, it has been turned into a trendy eatery for humans! The building was originally built in 1922 as an aquarium, then converted to amphibian and reptile use. When a new reptile house ("Creatures of Habitat") was built, the old one was converted to a restaurant food court. [*Chicago Tribune*, May 20, 1998, from Ray Boldt] I keep meaning to go over there. I remember the old, old reptile house with bottles and baskets and buckets with planks and bricks and snakes—everywhere snakes. It's one of those kid things. You go back and what you remember is gone.

Ssssstick 'em up

"Muggers are using snakes to terrorize and rob women in downtown New Delhi, a newspaper reported Monday. In the latest incident Saturday, three men thrust snakes at a woman in a taxi and demanded her money and jewelry, the *Times of*

India reported. The woman, Roshni, turned the valuables over. "Those bloodshot eyes and the snakes slithering all around keep coming back to me," Roshni said. The same men have attacked several other women, the newspaper said, citing police. [*Albuquerque Journal*, July 14, 1998, from James N. Stuart]

X-rays redux

I was interested to read (eventually—international postage tends to slow things down somewhat) in my June edition of the *CHS Bulletin*, a note in HerPET-POURRI concerning the dangers posed by airport X-ray machines. Recently, this subject has received quite a lot of coverage in the UK photographic press. The introduction of the new CTX 5000 machine to airports in the UK was discussed in an article in the magazine *What Camera* (Summer 1998) and a fax received from the manufacturers, a US company called "InVision Technology," states that the equipment will cause damage to films even as slow as 100 ISO! The CTX 5000 employs the dual technology of X-ray and CAT scanning to scrutinise luggage and its prime target is plastic explosive. . . . [Even so] a suspicious package detected at Manchester airport last December was eventually discovered to be not Semtex but Christmas Pudding! However, this equipment is not very common even in the UK where we have been compelled to endure the murderous tactics of various noble freedom fighters for over a quarter of a century and airport security is at a far higher level than generally practiced, hitherto, in the USA. Apparently President Clinton has insisted that US airport security should be strengthened in the aftermath of the TWA flight 800 explosion and X-ray examination of luggage is now commonplace. Manchester and Gatwick airports use the equipment but it must be appreciated that its intention is to scan luggage destined only for the aircraft hold. Therefore hand luggage will not be subjected to this formidable equipment. So by carrying all film, whether it is exposed or not, in hand luggage you should be safe, well almost. Fast film, i.e. ISO 3200, is still vulnerable but even then only after several passages through the small scale X-ray scanner. Far more susceptible to damage are all APS films. The small size of the cassette has only been made possible by making the film base itself thinner, the film more tightly wound and the plastic canister offers no resistance to the X-rays. Therefore if you are a user of this format then either carry the film in your pocket through the metal detector or ask for a hand search. 35 mm users may also ask, very politely, for this service, however beware. A reader's letter in the *Amateur Photographer* (4 July 1998) relates how he asked for his camera case to be hand-searched and was refused. Instead the customs officer insisted on emptying the case, then re-packing it and finally putting it through the X-ray machine for a second time. Apparently the film was undamaged despite this maltreatment. Whilst the international thuggery of terrorism continues to threaten innocent lives the use of this device and similar equipment will become increasingly common. Even non-travellers are not safe; according to the same article the Royal Mail routinely X-ray parcels too, so mail-order processing of film is also at risk! David Blatchford.

P.S. The 25th July edition of the *Amateur Photographer* carried an editorial which I summarize: "Ian Hutcheson who is the head of security for all British Airports Authority has instructed all supervisors to "accommodate requests from passengers to have their film hand searched." In addition Mr. Hutcheson states that " . . . new X-ray machines . . . used to screen luggage to be carried in the hold do cause damage to film. . . . We are . . . advising passengers to carry films in their hand luggage." Mr. Hutcheson reiterates that the X-ray machines that screen hand-luggage will not fog film. If you do wish to have film hand searched then it will simplify the procedure if you remove the film from its carton and canister then place them in a polythene [clear plastic] bag. The films and protective canisters can be reunited once you are through the security check and wondering what to do for the next few hours waiting for your flight."

Salamanders in the news

- "The *Philadelphia Inquirer* reported recently a 'most gruesome and rarely seen' animal of the northwest Pennsylvania woods is disappearing. The hellbender is 'not exactly charismatic megafauna,' said biology professor Art Hulse, 'but for a salamander, it is mega. OK, OK, it also looks dirty and ugly. But it is unique.' Hulse estimated the hellbender, a 'salamander on steroids . . . almost as long as the average man's inseam . . . ' has disappeared from 60% of its original stream habitat in Pennsylvania." [*GREENLines* #701, from Jay Lee]

- Introduced crayfish which were threatening southern California populations of *Taricha torosa* (California newts) were swept out to sea by torrential rains associated with El Niño. David Wake at UC Berkeley said, "The newts crawled out on land and the crayfish were swept downstream. Our native species have evolved in our erratic weather patterns—invaders are less able to cope with that." [*Los Angeles Times*, July 17, 1998, from Kim and Wes von Papineäu]

Quotes of the month

A sheriff involved in the search for a man alleged to be involved in Southern bombings and to be hiding out in the mountains of North Carolina said, "There's rattlers big enough up there to puke up a buck deer." A local person said that if the man "is in these mountains, they ain't going to find him. They're city people." [*Chicago Tribune*, July 22, 1998, from Ray Boldt]

Cool websites

Check out <http://www.bankokpost.com/today/200798_Outlook03.html> for a nifty story from the *Bangkok Post* about "how a school in Phayao province attracts visitors to see the strange tortoise with a big head and a nifty way of climbing trees." [from Phil Jones] For the latest on sea turtles drop by <http://www.cmc-ocean.org>. [from Kathy Bricker]

Thanks to everyone who has sent in stuff and particularly thanks to John Mason for installing enough RAM in my old PC that I can now use the program Opera to look at websites and "surf" the Internet. You can e-mail me your web addresses to <ebeltz@ripco.com> and keep sending print articles, too. Be sure the date/publication slug and your name are firmly attached and send to: Ellin Beltz, 1647 N. Clybourn Avenue, Chicago, IL 60614-5507.

Bull. Chicago Herp. Soc. 33(9):200-201, 1998

Herpetology 1998

In this column the editorial staff presents short abstracts of herpetological articles we have found of interest. This is not an attempt to summarize all of the research papers being published; it is an attempt to increase the reader's awareness of what herpetologists have been doing and publishing. The editor assumes full responsibility for any errors or misleading statements.

RADIO-TRACKING A WEST AFRICAN RANID

M. Spieler and K. E. Linsenmair [1998, Amphibia–Reptilia 19(1):43-64] conducted a telemetric study on *Hoplobatrachus occipitalis* (Anura: Ranidae) in the Comoé National Park (Ivory Coast, West Africa) from 1993 to 1995 during the beginning of the rainy seasons. Radio transmitters were implanted into 46 frogs. The locations of individual animals were tracked for 2 to 71 days, at least once per day and once per night. By day, the frogs were found in diurnal shelters that offered favorable temperature and humidity conditions as well as protection against predators. At night, with the beginning of the rainy season, both males and females occupied about equally large home ranges of on average 142 m^2 (range: 23–3744 m^2) in a partially dried-up river bed. Individuals with home ranges on rocky stretches along the river weighed significantly less (35 $\pm$ 9 g) and occupied significantly larger home ranges (median: 944 m^2) than did individuals found in places along the river having dense and shady vegetation (median of home range: 45 m^2, body weight: 66 $\pm$ 21 g). Frogs migrated when precipitation was above 15 mm per day (movement $>$30 m per animal and day). Movement over longer distance ($>$600 m per animal and day) took place only once a year, when the first heavy rainfall of the season filled the dried-up ponds in the savannah. On these longer migrations, nearly all radio-tracked frogs moved from the river to newly emerged ponds in the savannah, covering linear distances of up to 1.4 km in a single night. The frogs then stayed in the savannah and most of them repeatedly sought new breeding sites during the rainy season. Thus, the total space covered by the frogs, termed "activity area," amounted to up to 2 km^2, for both sexes, during the observation period.

REDESCRIPTION OF AN INDIAN PITVIPER

P. David and G. Vogel [1998, Hamadryad 22(2):73-87] note that the Indian pitviper *Trimeresurus huttoni* Smith, 1949, is known solely from two juvenile specimens collected in the High Wavy Mountains, a small mountain range southeast of Madurai, state of Tamil Nadu, southern India (these mountains are currently owned by a private tea estate). They redescribe the holotype in detail and include three black-and-white photographs. Based on detailed comparisons, the authors find that *huttoni* differs by the combination of six major, diagnostic generic characters (2nd supralabial not bordering the loreal pit, scales keeled on snout, upper head and chin, presence of a preocular streak, dorsolateral red and white spots) from all other members of the *Trimeresurus* complex with the exception of the Indo-Malayan *Tropidolaemus wagleri*, with which it shares all these characters. Consequently, they refer *huttoni* to the genus *Tropidolaemus*. The very long tail in *huttoni* and its geographical isolation lead the authors to regard it as specifically distinct, resulting in the new combination *Tropidolaemus huttoni*.

TEMPERATURE RELATIONS IN TWO TOAD SPECIES

U. Katz and N. Gil [1997, Amphibia–Reptilia 18(3):259-268] studied temperature relations of two species of toads (*Bufo viridis* and *B. regularis*) that overlap at the border of their ranges. The study took place in the laboratory in temperatures between 25 and 2°C. *B. regularis*, a tropical species, could not survive at low temperatures that eventually led to its death in 1–2 days. The two species did not differ in their cooling and heating rates. At temperatures below 8–10°C, *B. viridis* maintained a body temperature that was higher than ambient by 1–2°C, while body temperature of *B. regularis* equaled that of the environment. In *B. regularis* heartbeats ceased at low temperatures ($<$ 4°C), whereas in *B. viridis* at the same temperature, a rate of 6–9 beats/min was sustained. These experiments suggest that *B. viridis* is endowed with particular capacities that allow it to remain active at low temperatures, while in *B. regularis*, a temperature-sensitive central mechanism seems to be damaged at low temperature. The ability of *B. viridis* to endure low temperatures and to remain active in this condition is specific to the species, and is not related directly to the immediate ecological situation of the animal.

LARGEMOUTH BASS AND HATCHLING TURTLES

C. A. Britson [1998, Copeia (2):383-390] notes that previous experiments have shown that largemouth bass (*Micropterus salmoides*) avoid feeding on active painted turtle (*Chrysemys picta*) and red-eared slider (*Trachemys scripta*) hatchlings. Largemouth bass also develop learned avoidance to all hatchlings (dead, anesthetized or active) of these species after just one experience with an active hatchling by associating the bright plastral colors and patterns of these species with the defensive behaviors of the hatchlings. It has not been determined whether largemouth bass respond similarly to cryptic snapping turtles. The categorical feeding responses (avoided, rejected or eaten), quantitative feeding behaviors, and learning capabilities of largemouth bass to conspicuously colored painted turtle and cryptic common snapping turtle (*Chelydra serpentina*) hatchlings were examined. Significantly more active painted turtles were avoided, rather than rejected, when compared with all other hatchling treatments. Significantly more active snapping turtle hatchlings were rejected, rather than avoided, when compared with dead or anesthetized snapping turtles. There were also significant differences in the quantitatively defined feeding behaviors (e.g., number of repeated attacks and rejections, intensity of response, and length of handling time per hatchling presentation) for largemouth bass that preyed on painted and snapping turtles. Neither positive nor negative learning of hatchling painted and snapping turtle prey occurred over time in this experiment. These results are consistent with the hypothesis that the conspicuous form of a noxious (chemical, morphological or behavioral) prey item will have a higher survival rate than a cryptic, noxious prey.

BROAD-HEADED SKINK ESCAPE BEHAVIOR

W. E. Cooper, Jr., [1997, Herpetologica 53(4):464-474] experimentally studied the effects of speed and directness of approach by a human simulated predator and of female presence on the escape behavior of the broad-headed skink, *Eumeces laticeps*. Lizards that were approached rapidly fled while farther away from the predator than lizards that were approached more slowly. Skinks approached indirectly permitted closer approach than those approached directly. Approach distance increased more with directness of approach for individuals exposed on the ground than for those on trees. *Eumeces laticeps* responded to threat cues related to speed and directness of approach and distance from refuge. Males near females allowed closer approach than isolated males. Males with females have greater escape cost because they may lose fertilizations to other males and must search to relocate females. Risk miy be at least as great for males with females as for males alone, because two lizards are more likely than one to attract the attention of a predator, and females usually flee before males, leaving the males exposed alone. *Eumeces laticeps* adjusts escape behavior to both risk and cost. Results of this study exclude simple risk-minimization and all but exclude use of a fixed maximum risk threshold for escape.

OVERWINTERING IN ARKANSAS SOFTSHELLS

M. V. Plummer and J. C. Burnley [1997, Chelonian Cons. and Biol. 2(4):489-493] used radiotelemetry to study the behavior, hibernacula, and thermal relations of free-ranging spiny softshell turtles (*Trionyx spiniferus*) overwintering in a small stream in Arkansas. The softshells hibernated singly by burying in stream bottom sediments (various mixtures of mud, sand, and gravel) at sites within their summer home ranges. They did not hibernate in the deepest pools available, nor in readily available muskrat and beaver burrows. Water depths at hibernacula were deep enough ($\bar{x}$ = 46 cm) to prevent buried turtles from reaching the water surface by neck extension to breathe air as commonly occurs during the active season. Burial depths in sediment were shallow enough ($\bar{x}$ < 5 cm) to permit turtles to reach the water column for water breathing. Shifts in hibernacula occasionally occurred when brief warm periods stimulated activity. Body temperatures (T_b) of hibernating turtles ($\bar{x}$ = 7.3 ± 3.1°C; range, 1.5–16.2°C) closely tracked ambient environmental temperatures (T_a) and deviations ($T_b - T_a$) were randomly distributed around 0. Differences between T_b and T_a likely resulted from lags in reaching equilibrium body temperatures when water temperatures varied rapidly.

Unofficial Minutes of the CHS Board Meeting, August 14, 1998

The meeting was called to order at 8:00 P.M. Karen Bielski, Lori King-Nava, Jennie Picciola, Jack Schoenfelder and Jenny Vollman were absent.

Officers' and Committee Reports

The minutes of the July Board of Directors meeting were read, corrected and accepted.

The Treasurer's report was distributed and accepted.

Membership: Gino Martinez reported current membership at 997. There was some discussion on ways to distribute membership applications and make them more countertop visible in pet shops and veterinary offices. Gino will look into the cost of clear acrylic holders and report back to the board.

President: Steve Spitzer will be in contact with the Chicago Academy of Sciences and attempt to find out the earliest date for our meetings to return to their new facility. It still looks like spring 1999 is likely.

Steve reported that the CHS was once again warmly received at the Field Museum's Members' Nights. We should lobby for a better and bigger spot next year to help accommodate the masses of people who flock to our tables to see the animals. We will also look to have more of our members show up in the future, if only to spell the people who do bring animals. This year it was difficult to get out from behind our tables and see the rest of the museum.

Publications Secretary: Mike Dloogatch reports a substantial backlog of excellent articles soon to appear in the *Bulletin*.

Nominating Committee: Ron Humbert reported that the committee has already met once, with a second meeting scheduled for late August. The committee this year is looking to slate at least two candidates for as many of the positions as possible. Ron said the committee is also looking to drum up a few new faces for the member-at-large positions. It should prove to be an interesting election come November.

Picnic: Chairperson Audrey Vanderlinden reports a good time had by all at the CHS picnic, held on Sunday, August 2. This despite the hassle of the nearby "Freaknic," which unbeknownst to the picnic committee was held on the same day. Audrey would like to thank Perry Ross for his perseverance at the tedious task of unweaving the volleyball net, a necessary prerequisite to the volleyball games in which the female members trounced the men.

Round Table

Mike Dloogatch mentioned that he had been contacted by a TV producer from UPN. They are looking for people and stories for an upcoming series on pets.

Steve Spitzer thanked Audrey Vanderlinden and Bob Ryan for a great job in organizing this year's picnic . . . (Herpnic?)
The meeting adjourned at 9:30 P.M.

Respectfully submitted for the Recording Secretary by Audrey Vanderlinden

Advertisements

American Federation of Herpetoculturists: A nonprofit national membership organization of herpetoculturists, veterinarians, academicians and zoo personnel involved in the captive husbandry and propagation of amphibians and reptiles. Membership includes highly acclaimed magazine, *The Vivarium*, dedicated to dissemination of information on herpetocultural accomplishments, herp medicine, breeding and maintenance, field studies and adventures, enclosure design and much more. AFH membership is $26. Send information requests to: AFH-News, P.O. Box 300067, Escondido CA 92030-0067.

Artist wanted: My name is Jim Hatfield. I wrote the book, *Green Iguana—The Ultimate Owner's Manual* and I have an iguana column for *Vivarium* magazine. I am looking for some talented CHS member who could draw cartoons and/or iguana illustrations for my column and articles in other reptile magazines. Send me copies (*only*) of your work to: Jim Hatfield, P.O. Box 102, Lake Oswego OR 97034-0014. I will then get in contact with you.

Breeders' Expo: Atlanta Georgia's 3rd annual Breeders' Expo is September 5, 1998. **Only non-venomous, captive-bred animals**. Contact Georgia Herpetological Society, P.O. Box 464778, Lawrenceville GA 30046, or David Bowman at (770) 505-0547, for more information.

For sale: *Bulletin* boxes, $10 each. Library quality with "Chicago Herpetological Society" imprinted. Each container holds about two years' worth of *Bulletin*s. Send check or money order to Chicago Herpetological Society, 2060 N. Clark Street, Chicago IL 60614. Allow four weeks for delivery.

For sale: rats and mice—pinkies, fuzzies and adults. Quantity discounts. Please send a SASE for pricelist or call Bill Brant, *THE GOURMET RODENT*, 6115 SW 137th Avenue, Archer FL 32618, (352) 495-9024, E-mail <GrmtRodent@aol.com>.

For sale: murine-pathogen-free rats and mice available in all sizes, live or frozen: pinkies, fuzzies, crawlers, small, medium and large. Frozen crawler mice in lots of 2000, $.17 each. Also available, full grown hairless mice. FOB shipping point. Master Card accepted. Call (518) 537-2000 between 8:00 A.M. and 5:00 P.M. or write SAS Corporation, 273 Hover Avenue, Germantown NY 12526 for prices and additional information.

For sale: from **The Mouse Factory**, producing superior quality, frozen feeder mice since 1989. Our mice are frozen separately and vacuum-packed to greatly extend freezer life by reducing freezer burning and preserving vitamin and nutrient content. We feed our colony a nutrtionally balanced diet of Mouse Chow and four types of natural whole grains and seeds. Prices: pinkies, $25/100; fuzzies, $30/100; weaned, $35/100. Quantity discounts available. Ray Queen, P.O. Box 85, Alpine TX 79831. Call (800) 720-0076 or E-mail us at <mousefac@overland.net>. Fax (915) 837-0156.

For sale: from Bayou Rodents, excellent quality feeder mice and rats. Every size available. Pinks starting at $20/100. Orders are shipped by overnight service Monday thru Thursday. We accept Visa, MasterCard and Discover. For more info, contact Rhonda or Peggy, (800) 722-6102.

For sale: **high quality frozen feeders**. Over a decade of production and supply. Seven sizes of mice availabe: small newborn pinks up to jumbo adults. Prices start at $25 per 100. Feeders are separate in the resealable bag, not frozen together. Low shipping rates. Free price list. Kelly Haller, 4236 SE 25th Street, Topeka KS 66605, (913) 234-3358 evenings and weekends.

For sale: In stock, Flex-watt and Ultra-therm heating products. **Frozen rodents** always available. Mice: pinks–crawlers, 3/$1; weanlings, 40¢; subadult, 50¢; adults, 65¢; large adults, 75¢. Rats: small, 85¢–$1; medium, $1.25–2.00; large, $2.25–2.75; jumbo, 3/$10. Call on quantity discounts [note: discount on orders picked up at CHS meetings]. Live rodents available at higher prices. **Available now**: newsletter/catalog—many unique/hard-to-find herp husbandry items. Send business-size SASE for catalog, or call. Scott J. Michaels, D.V.M, Serpent City, P.O. Box 657, Island Lake IL 60042, (815) 363-0290.

For sale: Herp bags—colors vary, translucent ripcord nylon, super lightweight, extremely durable construction with hot corners sewn in, double seamed. Custom sizes made upon request. Sizes: 46" × 14", $7 each; 24" × 12", $6 each; 24" × 6", $5 each. Shipping fees, $1 for first bag, $.30 each additional bag. Nicole Lechowicz, 2511 S. Illinois Avenue, #104, Carbondale IL 62901, (618) 457-2783.

For sale: *Atlas of Reptiles and Amphibians* by Obst, Richter and Jacob (1988), w/ dust cover, new, $65; *Herpetology: Current Research on Reptiles and Amphibians*, SSAR publication, $25; *Reptiles and Amphibians of Australia* by Cogger (1986 4th edition), new, $65; *Encyclopedia of Reptiles and Amphibians* by Breen, $20; *Evolution in the Genus* Bufo, new, $75; *Captive Propagation and Husbandry of Reptiles and Amphibians: Proceedings, Northern California Herpetological Society, 1989*, $15; *Frogs of Boracéia* by Heyer, Rand et al. (1990), $40; *Poison Arrow Frogs* (*Pfeilgefrosche*) by R. Heselhaus (German version), $20; *Proceedings 10th & 11th I.H.S. Symposium 1986/1987*, $35; *Proceedings 12th I.H.S. Symposium 1988*, $25; *Proceedings 13th I.H.S. Symposium 1989*, $25; *Proceedings 15th I.H.S. Symposium 1991*, $25; *Captive Breeding* Magazine, first seven issues, $75. Prices somewhat negotiable. Chris, (734) 433-1601 eves. [MI]

For sale: 24" Neodeshas with glass, elongated vent and litter dam, three left, $40 each; 4" wide Flexwatt heat tape with clips, $8; 11" wide Flexwatt heat tape, two feet long, with rheostat, three left, $8 each. All supllies have rarely or never been used. Marc, (815) 293-0989 (Romeoville).

For sale: **Berwyn pick-up only!** two nice 23" × 15" × 14½" plywood cages with Plexy window, hinged front opening, internal lightbulb sockets and plug fixtures, linoleum floors, $50 each; **new** (never used) 4', glass door, Neodesha cage with dam, $175; three 2' Neodesha cages (used), Plexy doors, $30 each; 48" × 18" × 24" wood (redone hi-fi cabinet), top-opening, Plexy window, vinyl-lined cage (iguana!), $50; aquarium-style (doesn't hold water) 44" × 25" × 30", metal frame, slate bottom glass cage on castered wood platform with (torn) screen top, $40; 50" × 28" × 24" wood frame, mostly wire, tabletop cage, with Plexy side openings, $20; two new silver-metal-frame screen tops for 15-gal./20-gal. tall tanks, $10 each; heated plastic lizard limb, $10; two-piece heated Repti-heat cave, $10; several 5-, 10-, and 20-gallon tanks with lids, $5–20 each; several 18" × 12¼" × 6⅜" plastic giant Superpet Aquatariums (sweaterbox-type cages), nearly new, $15 each; three 8½" to 14" cage decorations, driftwood with slate base, $5 each; miscellaneous small glass water dishes, 10¢ to $2 each. Call Janice, (708) 484-7307.

For sale: Selling most of my collection. Great prices—some freebies! Some herps, but mostly arachnids. Andy Davies, (773) 279-1541.

For sale: two female leopard tortoises, LTC (2+ years), 12¾" and 13½", beautiful, healthy, $450 each. Mark Domka, (612) 822-7996. [MN]

For sale: c.b. redfoot tortoise, 7", $175; hatchling Sinaloan milksnakes, $30; 3' male desert Cal kingsnake, excellent b&w contrast, $60; one male and two female Sinaloan milksnakes, hatchlings produced for the last three years, $250/trio. Marc, (815) 293-0989 (Romeoville).

For sale: **Mutant bulls and lots of them!** 1998 hatchlings include: albinos (het. for snow), $100; anerythristic (male), $100; hypomelanistic double het. (male), $200; hypomelanistic double het. (female, imperfect), $125; **snow bull** (male), $500. All in perfect health, sexed and eating well. Beautiful patterns and colors from outstanding parents! Other 1998 offspring available: **northern blue tongue skinks** (*intermedia*), $50; black pines, $35. Also: **adult male Colombian boas**, proven breeders, flawless, $100 each. Jim, (414) 654-6303 after 6 P.M. Located just north of Chicago in Wisconsin.

For sale: one male and one female orange Pueblan milksnakes, c.b. '96, only bred once, produced gorgeous hatchlings last year, held back this year, $225/pair o.b.o.; baby corn snakes, Okeetee phase, 6-10 weeks old, well started, $10 ea.; one male and one female coastal carpet pythons, c.b. '98, beautiful and feeding well, $125/pair; boa constrictor, 2 years old, light grey with high contrast saddles, NICE, $50. Rob Carmichael, (847) 615-4388 or E-mail: <RCarmic416@aol.com>.

For sale: beautiful, tricolor kingsnakes. Send SASE for **free** list. Also, free phone consultation on snake husbandry problems as a service to the herp community. Robert Applegate, P.O. Box 338, Campo CA 91906, (619) 478-5123. Thank you for your attention.

Advertisements (cont'd)

For sale: c.b. '98 hatchling snakes: speckled kings, $15; Stuart's milks, $100. Henry Cohen, 24 St. Johns Place, Buffalo NY 14201, (716) 881-6724.

For sale: The Snake Lady has albino corns, hypo corns, ball pythons (eating well), Burmese pythons (albino and normal), boa constrictors and green tree pythons (2-year-olds and hatchlings) very tame and eating well. Blood pythons. One male Argentine boa. Albino alligator (geat investment opportunity), serious inquiries only, $50,000 firm. Call Tonya Maris for more info and current price list, (630) 851-2331 phone, (630) 851-9672 fax.

For sale: 1998 prospective hatchlings—Baird's rat snakes, prairie kingsnakes, California kingsnakes, $25 each; red milksnakes, $35 each; Mexican black kingsnakes, $40 each; trans-Pecos rat snakes, $45 each; albino speckled kingsnakes, Sinaloan, Pueblan, Mexican milksnakes, San Luis Potosí kingsnakes, $50 each; Ruthven's kingsnakes, $75 each; *thayeri*, *greeri*, graybands, $100 each; Arizona mountain kingsnakes, $125 each. Some breeders available. Steve Mitchener, (405) 748-6566 (after 5 P.M. CT). [OK]

For sale: **Premium captive-produced reptiles**. **Piebald black pines**; Brazilian rainbow boas (Lamar); blonde trans-Pecos rat snakes; Baja rat snakes; gray-banded kingsnakes (Langtry); Okeetee corns; melanistic garters (double hets); Peruvian matamatas; Mexican redleg tarantulas. Also, feeder mice and rats, husbandry items, bedding, etc. Mike Stefani, (630) 372-3936.

For sale: captive bred and born Sonoran desert boas, $90 each, $150/pair. Rick Printz, 301 Franklin Avenue, Springfield PA 19064, (610) 543-01910.

For sale: Entire collection. Two trios of one female and two male Argentine boas, c.b. 1992 and 1993, 7–9', very attractive specimens, both reproduced this year, $850/trio; neonate Argentine boas from above trios, $150 each; one male amd one female blood pythons, c.b. '92, 7', nice red and blood-red colors, great feeders, dog tame female, $600/pair; one male blood python, c.b. '92, 6', bright red screamer, dog tame, $500; one male and one female Dumeril's boas, pick of '95 litter, 3', aggressive feeders, $150 each; three male northern bluetongue skinks, c.b. '93, 22–25", nice colors, very tame, $75 each. Geoff Grant, (972) 548-1081 home, (972) 684-7090 work, Dallas, TX.

For sale: born 8/1/98, heterozygous for **albino** Colombian boa constrictors. Original **albino** strain outbred to my signature bloodline of *screaming* Colombians. I call them **"Ultra-Golden" Colombian boas!** Beautiful boas AND they're het. for **albino**, $750 each while they last. Also available: out-bred **albino** bulls, Sonoran gophers, and Okeetee corns. *Nothing* in my collection is inbred and *everything* in my collection is mite-free and *absolutely stunning*. Sound like a proud dad? Steven E. Snow, (815) 624-8204 (7:00 – 9:00 P.M.).

For sale: c.b. 7/98 Burmese pythons, albino $60 each, hetero for albino, $35 each; two female c.b. '97 Honduran milksnakes, $70 each; six male and 12 female leopard geckos, c.b. '98, high yellow, $25 each; four male c.b. '98 African fattail geckos, hetero for stripe, $35; male c.b. '97 Malaysian blood python, $200 (and more on the way! Due to hatch soon.) All snakes are sexed and feeding on defrosted. Care sheets provided for all animals. Sue Black, (607) 264-3441 6 P.M. – 10 P.M., or E-mail <Paradox1@worldnet.att.net>. [NY] [This ad ran last month with an incorrect E-mail address]

For sale: diamond and jungle carpets, $175 each; Macklot's pythons, $100 each; Children's pythons, $100 each; creamsicle corns, $40 each; albino corns, $22 each; snow corns, $20 each; bubblegum corns, $25 each; candy-cane corns, $35 each; het creamsicle corns, $15 each; Vegas Cal. kings, $20 each. **Adults**: creamsicle, $60; het ghost, $60; Children's python, $150; ball pythons, $175/pair; Dumeril's, $600/pair; Argentine rainbows, $500/pair; Haitian boas, $150/pair; Brazilian rainbows, $250 each; Indonesian bluetongue skinks, $55 each. Flexwatt heat tape, $2.50/ft, $5 each connection. Steve Bostwick (515) 274-4580, E-mail <liasis@juno.com>. [IA]

For sale: green tree pythons—female, light green with lots of blue marking, long-term captive, tame, ready to breed—male, 2-year-old, captive born, high blue vertebral striping, yellow sides, docile and a great eater, $600 each or $1100/pair. Also, 2-month-old, c.b., 50/50 Cal kings, $50. Mark Petros, Strictly Serpents, (847) 854-3259.

Tours: Adventure tours to Madagascar! Join **Bill Love** seeing and photographing fauna and flora, heavily herp-biased, across the world's least known mini-continent. Maximum fun & photo ops assured on every trip. Contact him at: BLUE CHAMELEON VENTURES, P.O. Box 643, Alva FL 33920. TEL: (941) 728-2390, FAX: (941) 728-3276, E-MAIL: <blove@cyberstreet.com>.

Tours: **Road-riding in Costa Rica!** Treat yourself to the trip of a lifetime! Learn about tropical herps, find them, photograph them, see where they live. **Greentracks, Inc.**, offers the best herpetological tours led by internationally acclaimed herpetologists and herpetoculturists. See the Amazon, visit cloud forests, experience the world's greatest rainforest, super sunsets and good company. Call (800) 9-MONKEY.

Wanted: Trying to locate the person who videotaped the presentations at the International Herpetological Symposium in Cincinnati. I was planning on attending but a surprise hospital stay cancelled my trip. Hoping to purchase a copy of the tape, if possible. Raymond Novotny, Ford Nature Center–Mill Creek MetroParks, 840 Old Furnace Road, Youngstown, OH 44511, (330) 740-7107 (office), (330) 740-7133 (fax), (330) 743-9261 (home).

Wanted: San Esteban Island spiny-tailed iguanas and Central and South American cribos. Rick Printz, 301 Franklin Avenue, Springfield PA 19064, (610) 543-01910.

Wanted: The following herps (Illinois natives) for the Wildlife Discovery Center (Lake Forest Recreation Dept.): Eastern milksnakes, red milksnakes, black ratsnakes, fox snakes, speckled kingsnakes, various turtles (snapping, painted, box, etc.), and other nice specimens (reptiles and amphibians) considered. Also looking for herp-related equipment such as quality tanks, filter systems, cages, heat tape/rocks/lamps, snake hooks, forceps, etc. All donations are tax deductible. This is an educational exhibit dedicated to dispel the many misconceptions of reptiles while also teaching the public about the many wonderful qualities of these creatures. Please contact Rob Carmichael at (847) 615-4388 or E-mail: <CarmichR@CityLF.LFC.edu>.

Wanted: big-headed turtles; mata mata turtles; Mexican giant mud turtles (*Staurotypus triporcatus*); exceptionally large common snappers (45 lbs. & up); large alligator snappers (over 90 lbs.); spectacled caiman from Trinidad, Tobago and Surinam; dwarf caiman; smooth-fronted caiman; albino turtles (except red-eared sliders). Walt Loose, (610) 926-6028, 9:00 A.M. – 1:00 P.M. or after 11:30 P.M. Eastern Time.

Wanted: Styrofoam boxes, any size or shape so long as they're not flimsy, preferably with cardboard liners, willing to pay from $2 to $5. Bring to CHS meetings. Scott J. Michaels, D.V.M, Serpent City, (815) 363-0290.

Line ads in this publication are run free for CHS members — $2 per line for nonmembers. Any ad may be refused at the discretion of the Editor. Submit ads to: Michael Dloogatch, 6048 N. Lawndale Avenue, Chicago IL 60659, (773) 588-0728 evening telephone, (312) 782-2868 fax, E-mail <MADadder0@aol.com>.

HERP-ACROSTIC #15 *by Mike Dloogatch*

1 J	2 P	3 V		4 T	5 L	6 J	7 V		8 J	9 D	10 S	11 B		12 T	13 R		14 W	15 H	16 J		17 J	18 O	19 F	20 V
21 C	22 T		23 R	24 W	25 M	26 G	27 X	28 J	29 H	30 E		31 S	32 M	33 F	34 T		35 A	36 Q		37 V	38 U	39 Q	40 R	41 B
42 A	43 S		44 P	45 I	46 L	47 J	48 C	49 N	50 W		51 O	52 G	53 B	54 X	55 S		56 K	57 V	58 F	59 W	60 N		61 K	62 Q
63 J	64 V		65 D	66 N	67 U	68 B	69 L		70 V	71 G	72 M	73 P	74 J	75 E	76 R		77 H	78 N	79 O	80 J		81 A	82 F	83 G
84 V	85 I	86 U	87 S	88 N	89 X	90 E		91 M	92 O	93 R	94 L	95 B	96 W	97 V		98 X	99 R	100 V	101 N	102 Q	103 J		104 B	105 G
106 E	107 T	108 R	109 I	110 F	111 J	112 V	113 W	114 K	115 Q	116 H	117 L	118 A		119 U	120 N		121 S	122 W	123 V	124 R	125 A		126 J	127 T
128 U	129 I		130 O	131 F	132 C	133 L		134 G	135 S	136 R	137 O	138 M	139 N	140 T	141 U	142 L	143 J	144 X		145 C	146 G	147 K	148 M	149 D
150 J		151 J	152 B		153 T	154 M	155 V	156 J		157 V	158 O	159 R	160 P	161 J	162 E	163 N	164 S	165 Q		166 L	167 I	168 V	169 G	170 H
171 J	172 F	173 B	174 D	175 E																				

How to solve this puzzle: The diagram, when filled in, will contain a quotation from a published work on herpetology. The numbered squares in the diagram correspond to the numbered blanks under the WORDS. The letter at the upper right of each square indicates the WORD containing the letter to be entered in that square. The WORDS form an acrostic: taking the first letter of each in order spells out the name of the author and the title of the work from which the quotation is taken.

CLUES **WORDS**

A. _____ giant day gecko, a subspecies of *Phelsuma madagascariensis*. 125 35 42 81 118

B. State in which one might expect to find *Kinosternon flavescens spooneri*. 173 68 11 95 41 152 53 104

C. Any *Notophthalmus* or *Taricha*, for example. 48 145 132 21

D. Co-author of *A Fieldguide to the Amphibians and Reptiles of Madagascar* (last name only). 149 174 9 65

E. A species of *Chinemys* is named for this English naturalist (1774–1856) (last name only). 75 175 106 162 30 90

F. Preservative of choice for most herpetological specimens. 82 58 172 19 33 131 110

G. The largest of the Australian monitor lizards. 105 52 83 134 146 169 26 71

H. Egyptian god of wisdom, often depicted as an ibis-headed human. 29 170 116 77 15

I. The final life stage of an insect, after it has undergone all metamorphoses. 85 129 109 45 167

J. *Cnemidophorus gypsi* (three words). 6 161 80 151 143 16 171 150 47 / 1 156 8 103 74 17 126 28 / 111 63

K. Prefix denoting "outside." 56 61 114 147

L. A species of cooter is named for this southeastern river. 69 94 166 46 133 117 142 5

M. Part of the common name of *Thamnophis couchii*. 154 72 148 91 25 32 138

N. A primitive marine reptile, known from Triassic fossil remains. 60 163 139 78 120 49 66 101 88

O. A tumultuous breakup of ice in a river. 130 137 51 79 92 18 158

P. *Trimeresurus flavoviridis*. 2 44 160 73

Q. _____ Mounds National Monument, Iowa. 62 36 39 115 102 165

R. Eccentric American naturalist (1783–1840), who named over 6700 organisms, including the massasauga and the western rattlesnake (last name only). 159 124 136 108 99 40 13 93 23 / 76

S. *Litoria raniformis*, for instance (two words). 121 43 31 10 135 164 87 55

T. Characterized by obstruction of the blood flow, as to a bodily organ. 12 22 107 127 34 153 140 4

U. Part of the common name of various geckos of the genus *Oedura*. 86 128 67 141 38 119

V. *Cryptobranchus alleganiensis bishopi* (two words). 100 112 57 168 155 157 97 7 64 / 84 3 20 37 123 70

W. Title of a 1996 book by Chris Mattison. 122 113 50 14 24 59 96

X. Veiled chameleons inhabit this country. 144 98 27 89 54

UPCOMING MEETINGS

The next meeting of the Chicago Herpetological Society will be held at 7:30 P.M., Wednesday, September 30, at the Field Museum of Natural History, Roosevelt Road at Lake Shore Drive, in Chicago. Speaking this month will be Ray Pawley, former Curator of Reptiles at Brookfield Zoo, and currently a Zoo Consultant. Ray, one of our most frequent and most popular speakers, will give us a report on "The Moscow Zoo Transformation." Ray's slides will also give us a look at another Russian animal exhibit, the Tula Zooexotarium.

The speaker at the October 28 meeting will be Kim Maheuron, an Environmental Specialist with the Collier County, Florida, Department of Natural Resources. Kim will talk to us about sea turtles and specifically about the sea turtle monitoring program in Collier County, in the vicinity of Naples, Florida.

We are required to use the entrance on the west side of the museum. **We are allowed to use the free parking lot to the west of the museum as long as space is available. Your best bet is to try that lot first before settling for the lot to the east of the museum or for the Soldier Field lot. For the latest on the parking situation call our CHS message line, (773) 281-1800, before you come.** Public transportation is an option: the Roosevelt Road (12th Street) bus now goes directly to the museum, thus providing a connection with the el and subway. This bus service runs until 11 P.M.

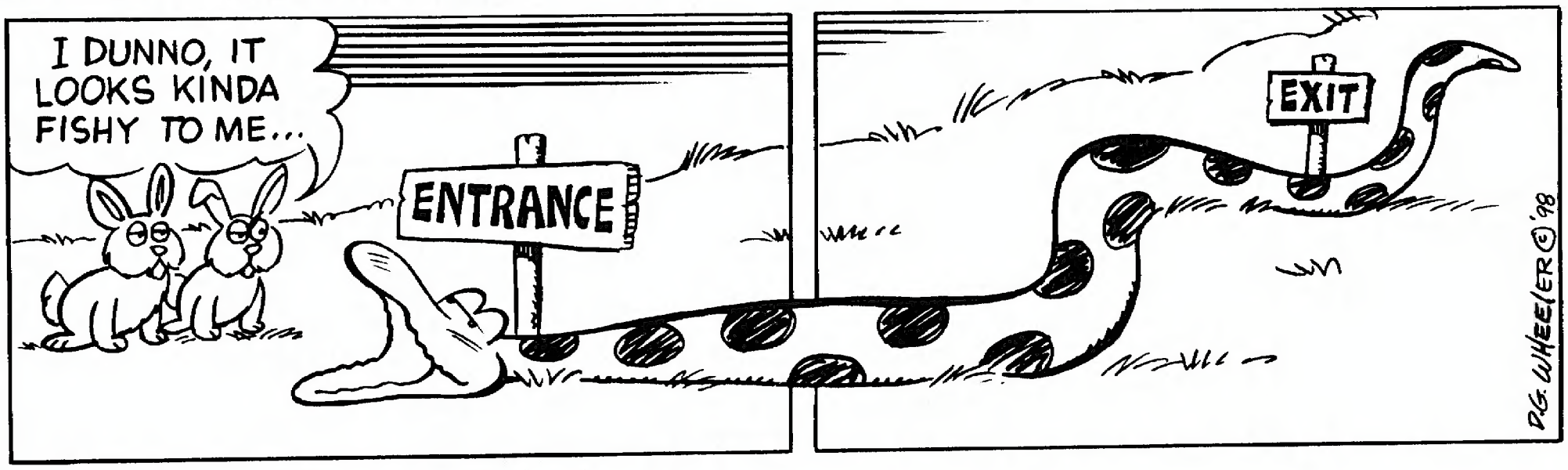
Turtle Club

The Chicago Turtle Club will meet Sunday, September 27, 1:00–3:30 P.M., at the North Park Village Administration Building, Room 105, 5801 N. Pulaski, in Chicago.

MOVING??

Please let us know in plenty of time of any change in your mailing address. The *Bulletin of the Chicago Herpetological Society* is sent to our U.S. members by bulk-rate third class mail. This means that the U.S. Post Office will not forward your *Bulletin* with the rest of your mail. This is so even if you make a special request that your magazines be forwarded (such a request only applies to second class mail).

THE ADVENTURES OF SPOT



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